MHC-EX5

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

MHC-EX5 is composed of following models.
As for the service manual, it is issued for each component model, then, please refer to it.

COMPONENT MODEL NAME FOR THESE SYSTEM

	TUNER	DECK	CD PLAYER	AMPLIFIER	SPEAKER SYSTEM
AEP,UK, IT, G, EE, CIS	ST-EX10	TC-EX5	CDP-EX10	TA-EX5	SS-EX50
E, EA, MY, SP, MX, AUS, HK, JE					SS-EX90G

SPECIFICATIONS

General

Power requirements
220 – 230V AC, 50/60Hz
(AEP, UK, IT, G, EE, CIS model)
110 – 120V/220 – 240V
AC, 50/60Hz Adjustable (E, EA, MY, SP, MX, AUS, HK, JE model)

Power consumption
110W (AEP, UK, IT, G, EE, CIS model)
115W (E, EA, MY, SP, MX, AUS, HK, JE model)

- Abbreviation
  - EE : East European model
  - G : German model
  - IT : Italian model
  - EA : Saudi Arabia model
  - MX : Mexican model
  - MY : Malaysia model
  - SP : Singapore model
  - AUS : Australian model
  - HK : Hong Kong model
  - JE : Tourist model

Supplied accessories

AM loop aerial (1)
Remote RM-S75 (1)
Sony SUM-3 (NS) batteries (2)
FM lead aerial (1)
Flat cord (1)
Audio cords (4)
(50 cm, for connecting components)
Speaker cords (2)

Design and Specifications subject to change without notice.

MINI Hi-Fi COMPONENT SYSTEM

SONY®

PARTS LIST (Accessories & Packing Materials)

NOTE :

- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Abbreviation

EE	: East European model	MY	: Malaysia model
G	: German model	SP	: Singapore model
IT	: Italian model	AUS	: Australian model
EA	: Saudi Arabia model	HK	: Hong Kong model
MX	: Mexican model	JE	: Tourist model

Part No.	Description
1-467-923-11	REMOTE COMMANDER (RM-S75)
1-501-721-21	ANTENNA, LOOP
1-501-594-31	ANTENNA (FM) (AEP, UK, IT, G, EE, CIS)
1-501-659-41	ANTENNA (FM) (E, EA, MY, SP, MX, AUS, HK, JE)
1-558-271-11	CORD, CONNECTION
1-769-170-11	CORD (WITH CONNECTOR)
3-707-584-21	COVER, BATTERY (FOR RM-S75)
3-798-721-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH/CHINESE) (E, EA, MY, SP, MX, AUS, HK, JE)
3-798-721-41	MANUAL, INSTRUCTION (ARABIC) (EA)
3-798-723-11	MANUAL, INSTRUCTION (ENGLISH) (UK)
3-798-723-41	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH/POLTUGUESE) (AEP)
3-798-723-51	MANUAL, INSTRUCTION (GERMAN/DUTCH/SWEDISH/ITALIAN) (AEP)
3-798-723-61	MANUAL, INSTRUCTION (GERMAN) (G)
3-798-723-71	MANUAL, INSTRUCTION (ITALIAN) (IT)
3-798-723-81	MANUAL, INSTRUCTION (ENGLISH/RUSSIAN/POLISH) (EE)
3-798-723-91	MANUAL, INSTRUCTION (ENGLISH/RUSSIAN) (CIS)
* 4-972-565-01	CUSHION (PM) (FRONT) (AEP:Made in Japan, EE, CIS) (FOR ST/TA/CDP/TC)
* 4-972-566-01	CUSHION (PM) (REAR) (AEP:Made in Japan, EE, CIS) (FOR ST/TA/CDP/TC)
* 4-972-567-31	INDIVIDUAL CARTON (AEP, EE, CIS)
* 4-972-576-01	CUSHION (PM2) (FRONT) (AEP:Made in France, UK, IT, G) (FOR TA/CDP/TC)
* 4-972-577-01	CUSHION (PM2) (REAR) (AEP:Made in France, UK, IT, G) (FOR TA/CDP/TC)
* 4-972-578-31	INDIVIDUAL CARTON (AEP, UK, IT, G)
* 4-972-591-01	CUSHION (ST) (FRONT) (ST-EX10:AEP:Made in France, UK, IT, G)
* 4-972-592-01	CUSHION (ST) (REAR) (ST-EX10:AEP:Made in France, UK, IT, G)
* 4-972-593-01	INDIVIDUAL CARTON (ST-EX10:AEP:Made in France, UK, IT, G)
* 4-972-597-01	CUSHION (TCC) (FRONT) (E, EA, MY, SP, MX, AUS, HK, JE) (FOR TA/CDP/TC)
* 4-972-598-01	CUSHION (TCC) (REAR) (E, EA, MY, SP, MX, AUS, HK, JE) (FOR TA/CDP/TC)
* 4-972-599-01	CUSHION (S) (FRONT) (E, EA, MY, SP, MX, AUS, HK, JE) (FOR ST)
* 4-972-600-01	CUSHION (S) (REAR) (E, EA, MY, SP, MX, AUS, HK, JE) (FOR ST)
* 4-972-604-01	INDIVIDUAL CARTON (E, EA, MY, SP, MX, HK, JE)
* 4-972-604-11	INDIVIDUAL CARTON (AUS)

9-960-062-11

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Consumer A&V Products Company
Home A&V Products Div.

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Quality Engineering Dept.

TC-EX5

SERVICE MANUAL

AEP Model
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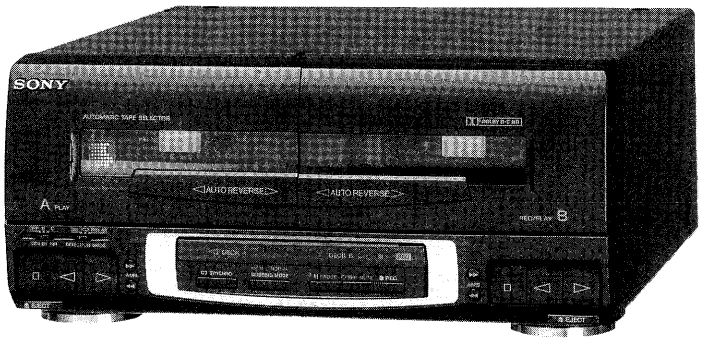

TC-EX5 is cassette deck section in MHC-EX5.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism		NEW
Tape Transport Machanism Type	DECK A	TCM-190RA12CL
	DECK B	TCM-190RB52C

SPECIFICATIONS

Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
40 – 13,000 Hz (±3 dB),
using Sony TYPE I cassette
40 – 14,000 Hz (±3 dB),
using Sony TYPE II cassette
40 – 15,000 Hz (± 3 dB),
using Sony TYPE IV cassette
Wow and flutter
0.1% WRMS±0.3% (DIN)
Dimensions
Approx. 280 x 125 x 285 mm (w/h/d)
(11 1/8 x 5 x 11 1/4 inches)
Mass Approx. 2.9 kg (6 lb 7 oz)

Design and specifications are subject to change without notice.

STEREO CASSETTE DECK

SONY®

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICING NOTE

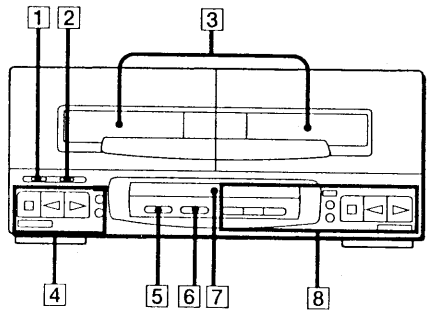
• **POWER SUPPLIED WHILE SERVICING**

This unit does not work independently because of not having the power supply.
It must be unite together with the other units when repaired.

SECTION 1
GENERAL

This section is extracted from instruction manual.

LOCATION OF CONTROLS



1 DOLBY NR selector (15)
2 DIRECTION MODE selector (14)
3 Cassette compartments (14)
4 Tape operating buttons (for deck A)
▷ (front side play) (14)
◁ (reverse side play) (14)
□ (stop) (14)
▶▶ (fast rightward and AMS**) (14)
◀◀ (fast leftward and AMS**) (14)
⏏ EJECT button (14)
5 CD SYNCHRO button* (15)
6 DUBBING MODE button* (19)
7 Display window
8 Tape operating buttons (for deck B)
▷ (front side play) (14)
◁ (reverse side play) (14)
□ (stop) (14)
▶▶ (fast rightward and AMS**) (14)
◀◀ (fast leftward and AMS**) (14)
❚❚ PAUSE (14)
○ REC MUTE button (16)
● REC (recording) (16)
⏏ EJECT button (14)
**AMS: Automatic Music Sensor (14)

SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab:
   record/playback/erase head pinch roller
   rubber belts capstan
   idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Head demagnetizer do not approach for the erase head.)
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

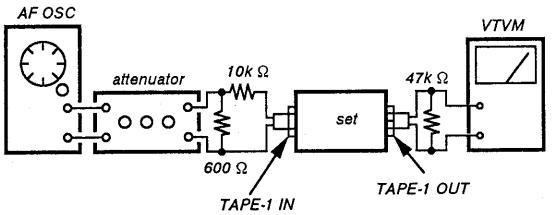
Torque	Torque meter	Meter reading
Forward	CQ-102C	30 to 60g • cm (0.42 to 0.83oz • inch)
Forward back tension	CQ-102C	1 to 5g • cm (0.014 to 0.069 oz • inch)
Reverse	CQ-102RC	30 to 60g • cm (0.42 to 0.83 oz • inch)
Reverse back tension	CQ-102RC	1 to 5g • cm (0.014 to 0.069 oz • inch)
FF/REW	CQ-201B	65 to 90g•cm (0.91 to 1.25 oz•inch)

2-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

1. The adjustment should be performed in the publication. (Be sure to male playback adjustment at first.)
2. The adjustments and measurement should be performed for both L-CH and R-CH.
   - Switch position
     DOLBY NR switch : OFF
     DIRECTION MODE switch : ⇄
   - Standard record position :
     Deliver the standard input signal level to input jack as follows.

– Record Mode –



Standard Input Level

Input terminal	TAPE-1 (LINE IN)
source impedance	10k Ω
input signal level	0.5V (− 3.8dB)

Standard Output Level

Output terminal	TAPE-1 (LINE OUT)
load impedance	47k Ω
output signal level	0.5V (− 3.8dB)

Test Tape

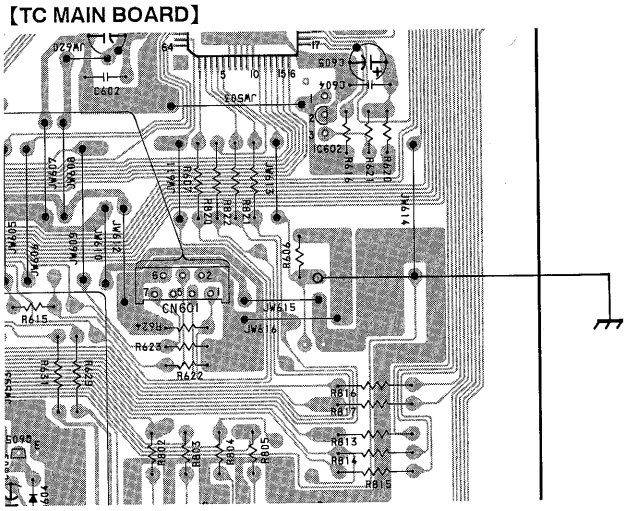
Tape	Contents	Use
P-4-A100	10kHz, − 10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	PB Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

0dB=0.775V

Test Mode

1. If the power supply is TA-EX5. (When AU BUS is alive)
   ① Short-circuit following portion (IC104 ⑤ pin) on the main board.
   ② Turn the POWER on.
   ③ Open the short-circuit to release test mode.

【TC MAIN BOARD】



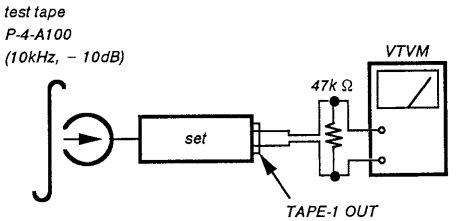
2. If the power supply is a jig.
   After, turning on the power, press the STOP button of both DECK-A and DECK-B at the same time.

Record/Playback Head Azimuth Adjustment

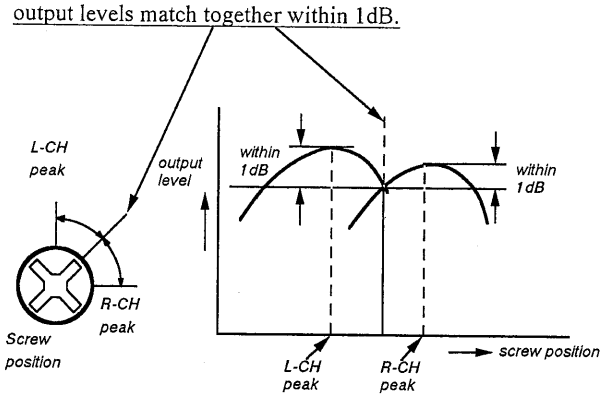
DECK-A DECK-B

Procedure :

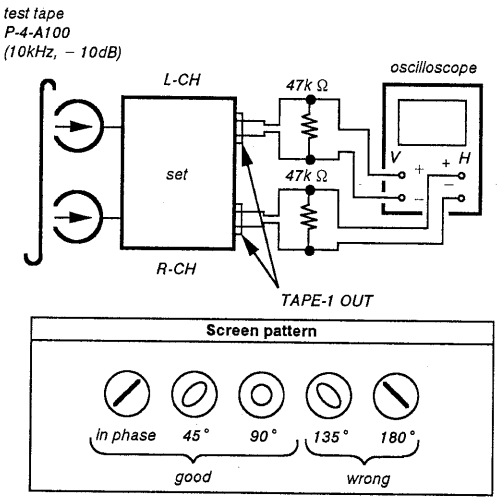
1. Forward playback Mode



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.

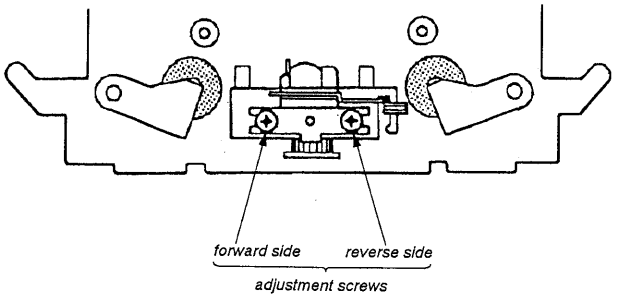


3. Playback Mode



4. Change the reveres playback mode and repeat the steps 1 to 3.
5. After the adjustment, lock the adjustment screws with suitable locking compound.

Adjustment Location : – record/playback head –

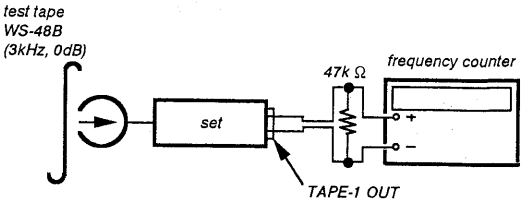


Tape Speed Adjustment

DECK-A DECK-B

Procedure :

– Forward Playback Mode –



(high speed adjustment)

1. Connect ⑤ pin of IC104 to ground with lead wire.
2. Set to FWD playback mode.
3. Keep on pressing the DUBBING MODE button at HIGH position.
4. Adjust RV72 so that the frequency counter reading becomes 6,000 ± 30Hz.

(normal speed adjustment)

1. Set to FWD playback mode.
2. Set the DUBBING MODE button to NORMAL.
3. Adjust RV71 so that the frequency counter reeding becomes 3,000 ± 15Hz.

Frequency difference between the beginning and the end of the tape should be within 3%.

Frequency difference between the deck A and deck B the beginning of the tape should be within 1.5%.

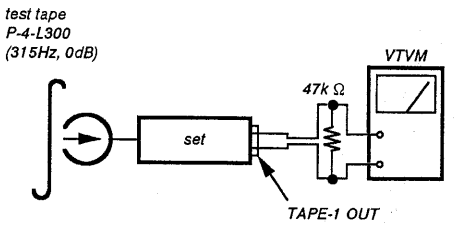
Adjustment Location : AUDIO board. (See page 6)

Playback Level Adjustment

DECK-A DECK-B

Procedure :

– Forward Playback Mode –



Adjust RV11(L-CH) and RV21(R-CH) so the VTVM reading becomes the adjustment limits below.

Adjustment Value :

TAPE-1 OUT level : – 7.7 ± 0.5dB (0.301 to 0.338V)

Level difference between channels : within 0.5dB

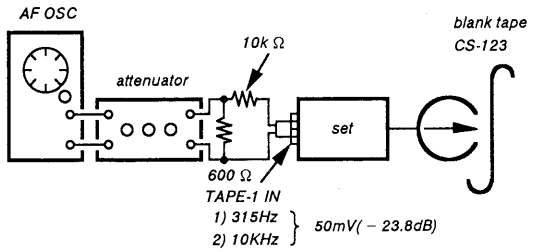
Confirm the TAPE-1 OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location : AUDIO board. (See page 6)

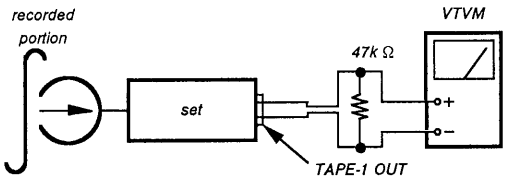
Record Bias Adjustment DECK-B

Procedure :

1. Record Mode



2. Playback Mode



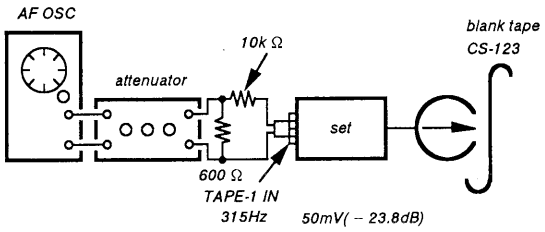
Confirm that the 10kHz playback output is 0 ± 0.5dB relative to the 315Hz output. If necessary, adjust RV12 (L-CH), RV22 (R-CH) and repeat the steps given above.

Adjustment Location : AUDIO board. (See page 6)

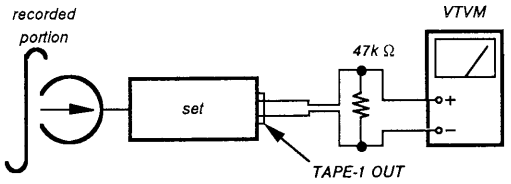
Record Level Adjustment DECK-B

Procedure :

1. Record Mode



2. Playback Mode



Confirm playback the tape recorded become adjustment level as follows.

If necessary, adjust RV101 (L-CH), RV201 (R-CH) and repeat the steps 1 and 2.

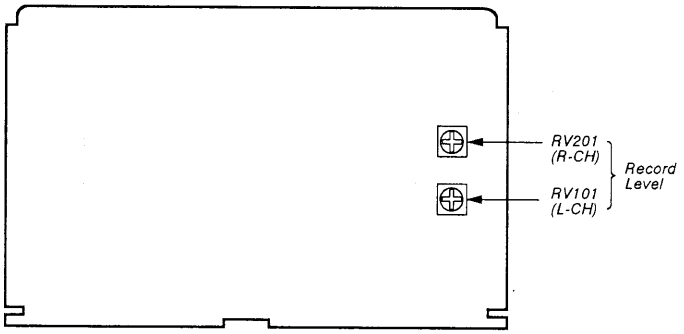
Adjustment Value :

TAPE-1 OUT level : – 23.8 ± 0.5dB (47.2 to 53mV)

Adjustment Location : TC MAIN board. (See page 6)

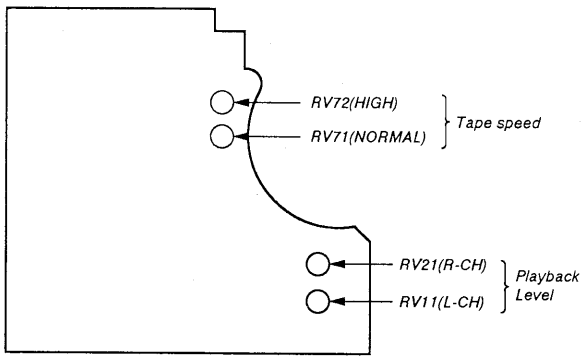
– Adjustment Parts Location Diagrams –

【TC MAIN BOARD】



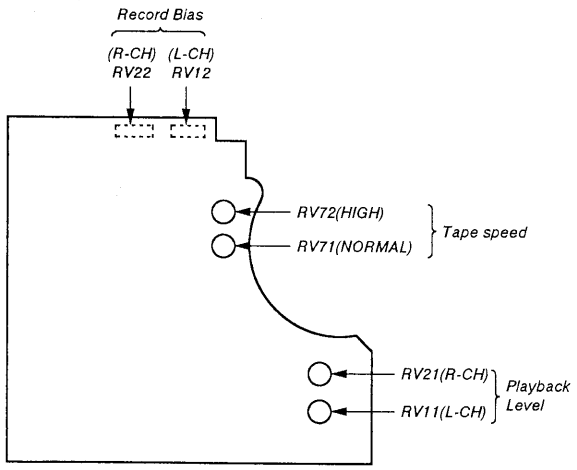
DECK A :

【AUDIO BOARD】



DECK B :

【AUDIO BOARD】



SECTION 3
EXPLANATION OF IC TERMINALS

IC104 M38123M4-118FP TC CONTROL (TC MAIN BOARD)

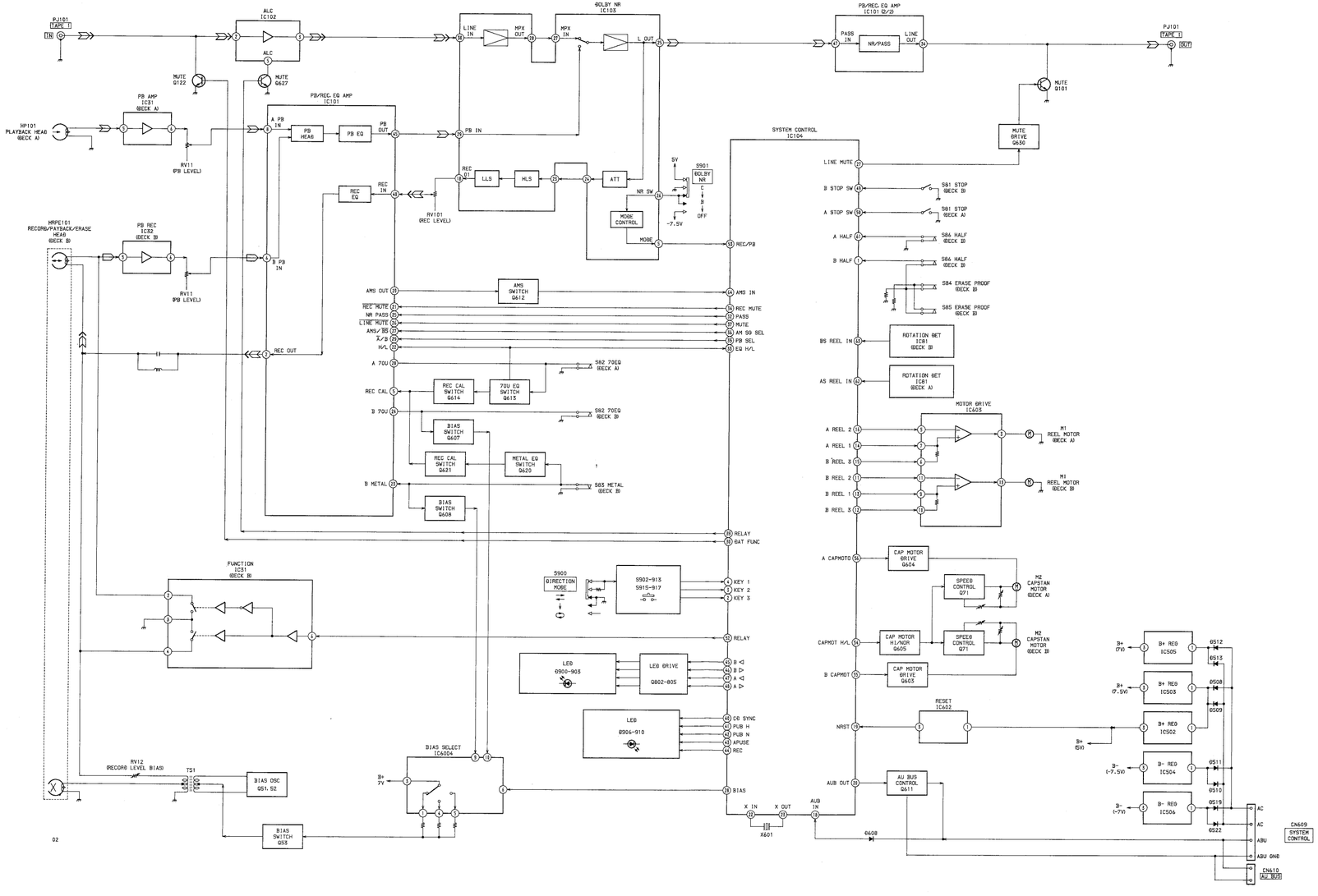
Pin No.	Pin name	I/O	Description
1	B HALF	I	B Half detection input. "L" : Presence "H" : Nothing
2	KEY3	I	Key input. (A/D converter analog input)
3	KEY2		
4	KEY1		
5	TEST	I	Electrical adjustment test mode setting. "L" : Test mode
6	DISP RST	O	GND.
7	DISP SYNC		
8	DISP CLK		
9	DISP OUT		
10	DISP IN		
11	B REEL2	O	Deck B reel motor control output.
12	B REEL3		
13	B REEL1		
14	A REEL1	O	Deck A reel motor control output.
15	A REEL3		
16	A REEL2		
17	PWR IN	I	+5V power supply input.
18	AUB IN	I	Audio bus input.
19	NRST	I	Microcomputer reset input.
20	AUB OUT	O	Audio bus output.
21	XC OUT	O	Not used. (GND)
22	X IN	I	Osillator connection pins. (4MHz)
23	X OUT	O	
24	Vss	–	GND.
25	VER	–	GND.
26	PWR OUT	O	Not used. (Open)
27	LINE MUTE	O	Line mute ON/OFF. "L" : ON
28	BIAS	O	Bias oscillation control output. "L" : ON
29	NC	–	GND.
30	DAT FUNC	O	DAT mute output.
31	CD FUNC	O	CD mute output.
32	PASS	O	PASS amplifier switch output to dolby.
33	EQ H/L	O	REC equalizer switching output. "L" : High speed "H" : Normal speed
34	REC MUTE	O	REC mute output.
35	PB SEL	O	Play mode deck A/B select output. "L" : DECK A "H" : DECK B
36	AMS G SEL	O	AMS/BS mode select output. "H" : AMS mode "L" : BS mode
37	1599 MUTE	O	Mute output to IC101 (CXA1599Q). "H" : ON "L" : OFF
38	NC	–	Not used. (GND)
39	NR RELAY	O	ALC control output.
40	CD SYNC	O	CD synchro dubbing LED output "H" : ON "L" : OFF

	FF	TRIG	STOP	FWD
REEL 1	H	L	L	H
REEL 2	L	H	L	L
REEL 3	H	H	L	L

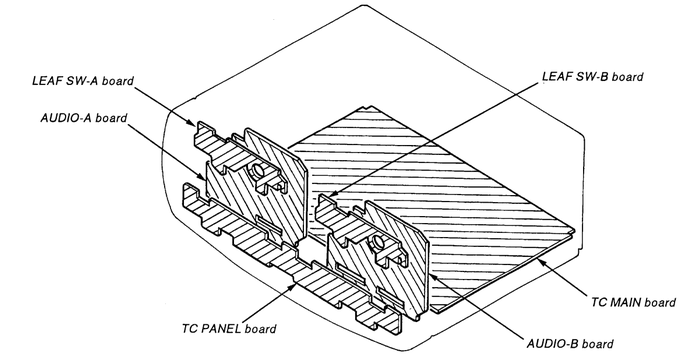
Pin No.	Pin name	I/O	Description
41	DUB H	O	High speed dubbing LED output. "H" : ON "L" : OFF
42	DUB N	O	Normal speed dubbing LED output. "H" : ON "L" : OFF
43	PAUSE	O	PAUSE LED output. "H" : ON "L" : OFF
44	REC	O	REC LED output. "H" : ON "L" : OFF
45	B ◁	O	Deck B REV LED output. "H" : ON "L" : OFF
46	B ▷	O	Deck B FWD LED output. "H" : ON "L" : OFF
47	A ◁	O	Deck A REV LED output. "H" : ON "L" : OFF
48	A ▷	O	Deck A FWD LED output. "H" : ON "L" : OFF
49	B STOP SW	I	Deck B stop detect input. "H" : STOP
50	A STOP SW	I	Deck A stop detect input. "H" : STOP
51	+7.5V DET	I	+7.5V power supply detect input.
52	RELAY	O	Control output to REC/PB select output. "H" : REC "L" : PLAY
53	REC/PB	O	Dolby IC (IC103) REC/PB select output. "H" : REC "L" : PLAY
54	CAP. MOT H/L	O	Capstan motor HIGH/LOW select output. "H" : HIGH "L" : LOW
55	B CAP. MOTOR	O	Deck B capstan motor control output. "H" : ON "L" : OFF
56	A CAP. MOTOR	O	Deck A capstan motor control output. "H" : ON "L" : OFF
57	V_{DD}	–	+5V power supply.
58	VEE	–	GND.
59	AV_{SS}	–	GND.
60	VREF	I	A/D converter reference power supply +5V.
61	A HALF	I	Deck A half detect input.
62	BS. REEL IN	I	Deck B reel table signal input.
63	AS. REEL IN	I	Deck A reel table signal input.
64	AMS IN	I	AMS input. "L" : No song "H" : Song

SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM



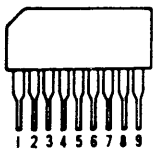
● CIRCUIT BOARD LOCATION



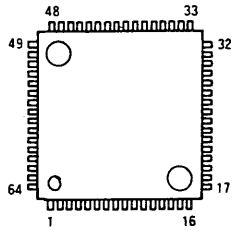
- Signal path.
  - : PB (DECK A)
  - : PB (DECK B)
  - : REC (DECK B)

● SEMICONDUCTOR LEAD LAYOUTS

BA3308

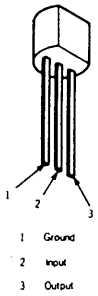


M38123M4-118FP

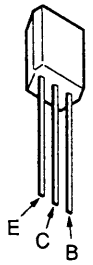


(TOP VIEW)

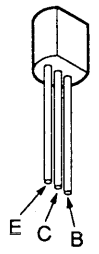
PST572D



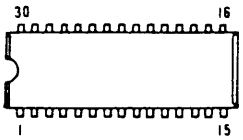
DTA114ES
DTA144ES
DTC114ES
DTC144ES



2SD1387
2SD1616A-K

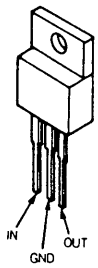


CXA1331S

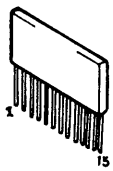


(Top view)

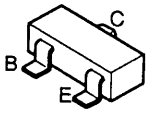
M5F7805S
M5F7807
M5F7907L
TA7805S



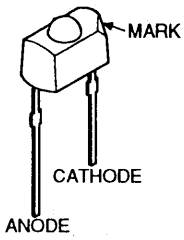
TA8242AK



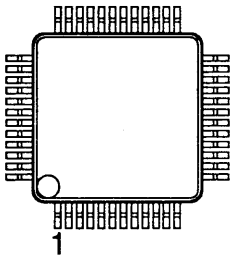
2SA1162-G



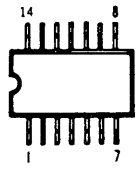
SEL5221S-TP15
SEL5421E-TH8F
SEL5921A-TH15



CXA1599Q



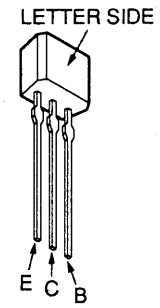
μPC1330AGR



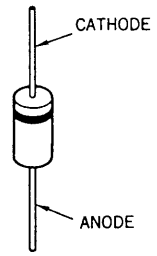
(TOP VIEW)

2SA1175-HFE
2SC3623A-K

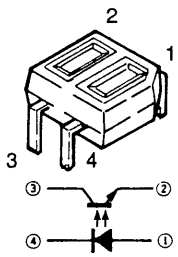
LETTER SIDE



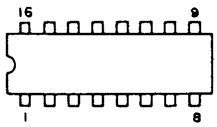
UZ-2.0BSB
1N4148M
10E2



NJL5165K-B (H1)

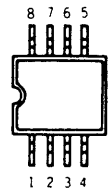


MC14052BCP



(TOP VIEW)

μPC4570G2



(TOP VIEW)

4-2. PRINTED WIRING BOARDS

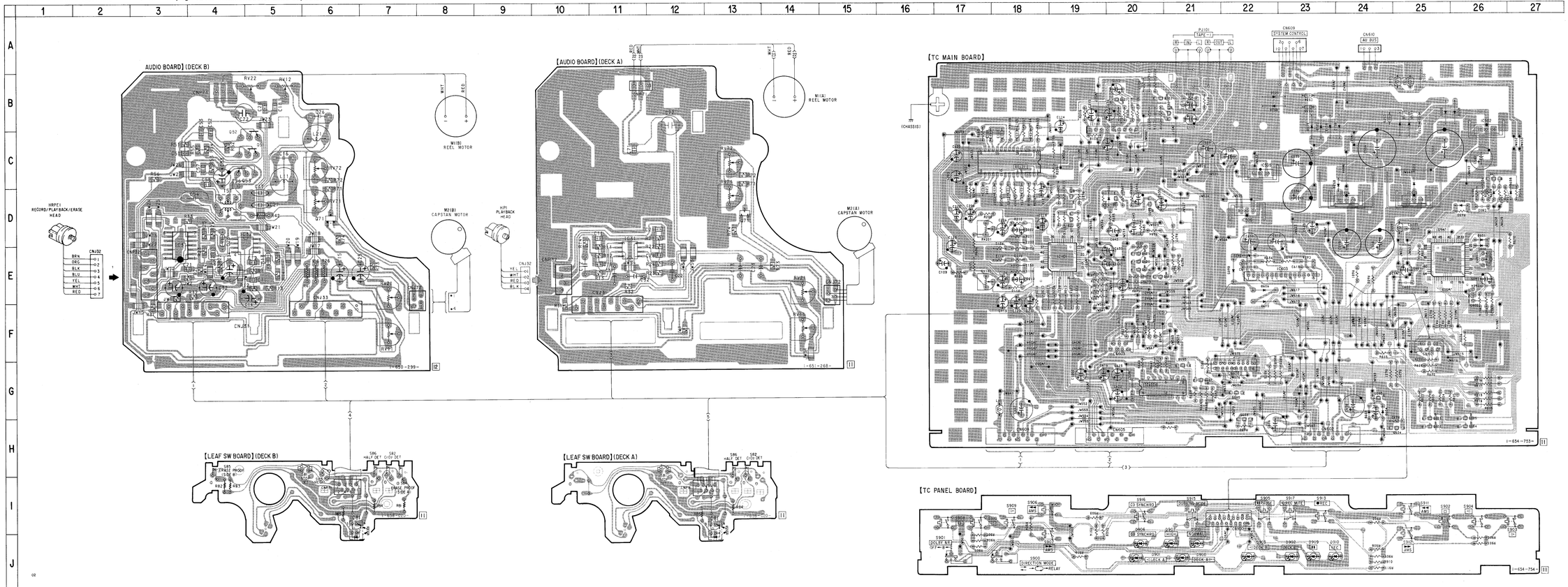
• Refer to page 12 for Semiconductor Lead Layouts.

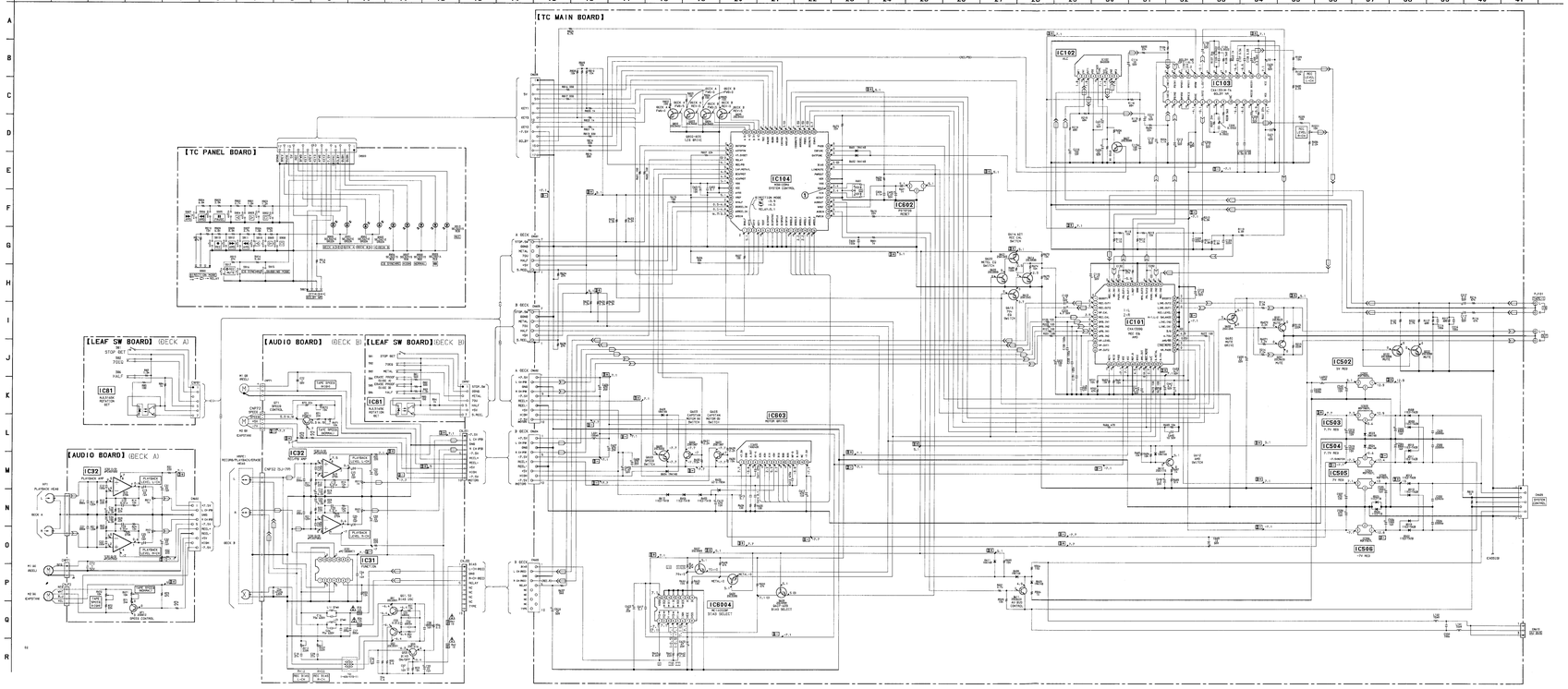
• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D508	B - 26	IC102	C - 20
D509	B - 25	IC103	C - 18
D510	B - 25	IC104	E - 25
D511	B - 25	IC502	C - 26
D512	B - 24	IC503	D - 25
D513	B - 23	IC504	D - 24
D519	B - 23	IC505	C - 22
D522	B - 23	IC506	D - 22
D523	C - 25	IC602	E - 26
D524	D - 24	IC603	E - 22
D525	B - 22	IC6004	G - 20
D526	B - 22		
D601	D - 26		
D602	E - 26	Q51	C - 5
D603	G - 24	Q52	C - 5
		Q53	C - 4
D604	G - 24	Q71 (A)	D - 13
D605	E - 22	Q71 (B)	D - 6
D606	E - 22		
D607	D - 20	Q101	D - 19
D608	D - 27	Q122	B - 21
		Q201	D - 19
D609	D - 26	Q222	B - 20
D610	F - 22	Q603	H - 22
D611	D - 26		
D620	E - 20	Q604	H - 24
D900	J - 21	Q605	G - 24
		Q607	G - 21
D901	J - 20	Q608	G - 21
D902	J - 23	Q609	G - 22
D903	J - 22		
D906	J - 20	Q611	C - 26
D907	J - 21	Q612	D - 20
		Q613	E - 20
D908	J - 21	Q614	E - 20
D909	J - 23	Q620	E - 20
D910	J - 23		
		Q821	E - 20
		Q627	B - 20
IC31 (A)	E - 11	Q630	D - 20
IC31 (B)	D - 3	Q802	H - 25
IC32	D - 4	Q803	H - 25
IC81 (A)	I - 13		
IC81 (B)	I - 5	Q804	H - 26
		Q805	H - 26
IC101	E - 19		

Note:

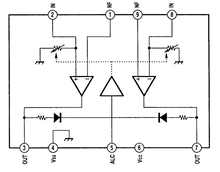
- ○— : parts extracted from the component side.
- ▒▒▒ : Pattern on the side which is seen.



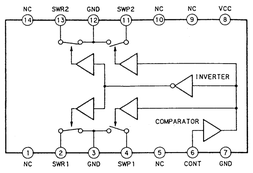


• IC BLOCK DIAGRAMS

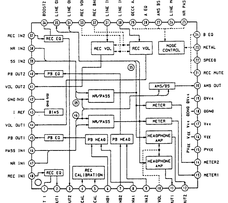
IC102 BA3308



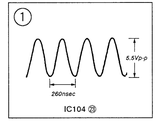
IC31 μPC4570G2



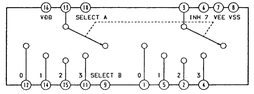
IC101 CXA1599Q



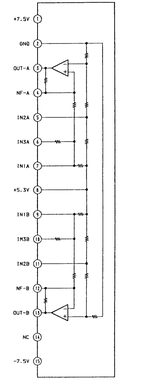
• WAVEFORM



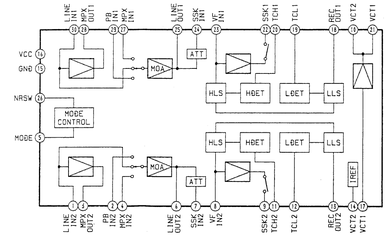
IC6004 MC14052BCP



IC603 TA8242AK



IC103 CXA1331S



Note :

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.
- ▭ : nonflammable resistor.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

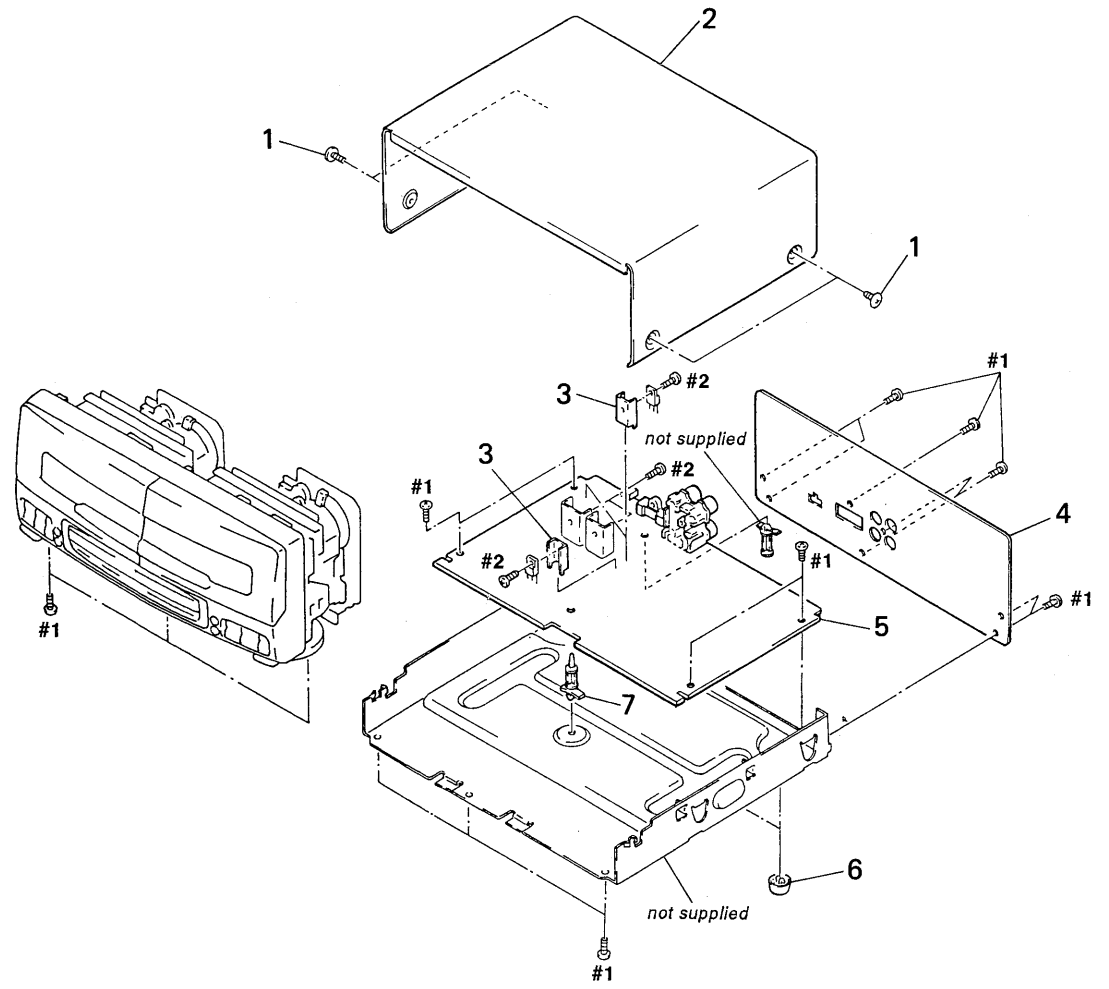
- B+ : B+ Line
- B− : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
  ( ) : REC
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ▷ : PB (DECK A)
  ▭ : PB (DECK B)
  ▭▷ : REC (DECK B)

SECTION 5
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

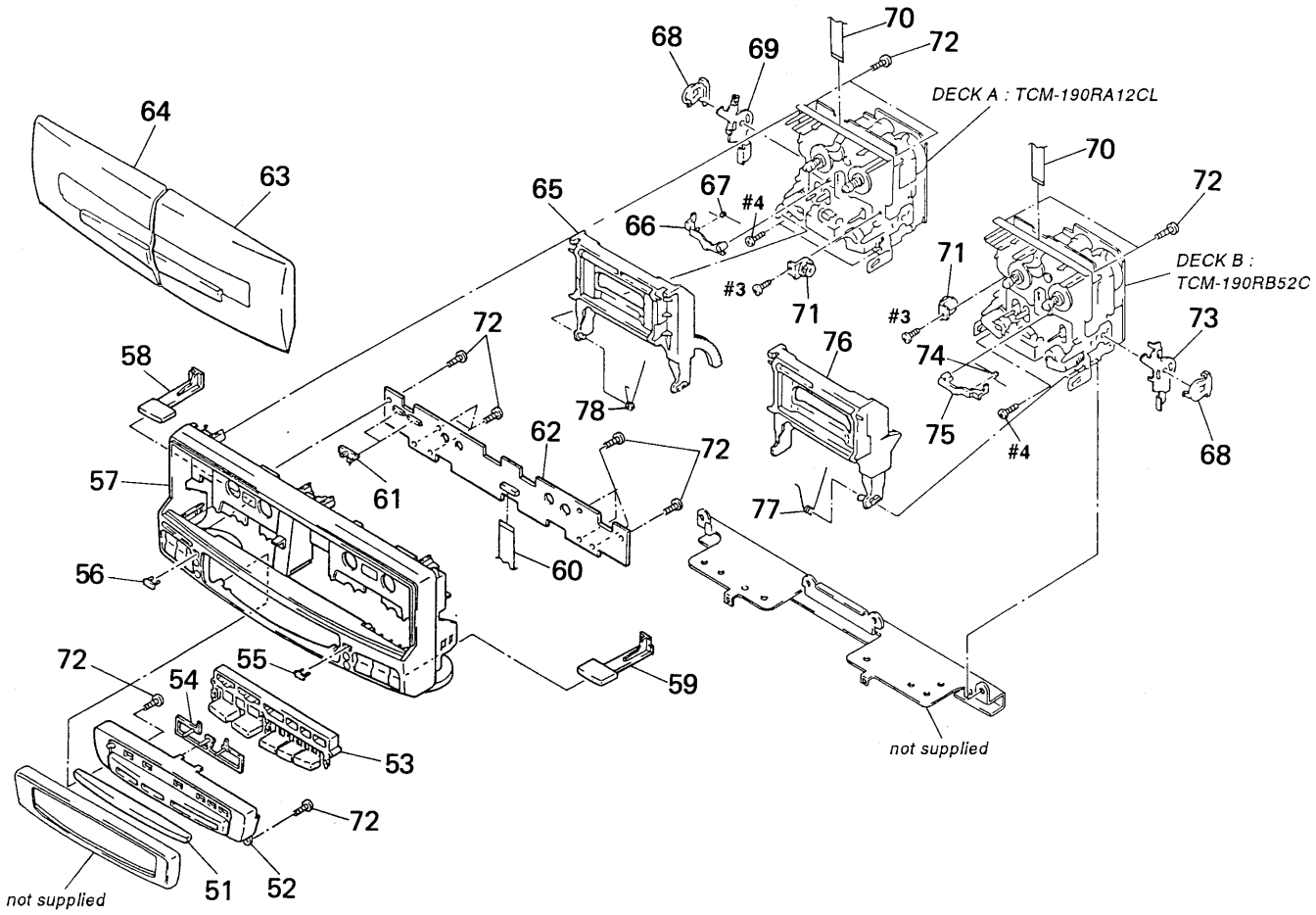
5-1. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
1	3-363-099-21	SCREW (CASE 3 TP2)	
2	3-919-558-01	CASE	
* 3	3-309-144-21	HEAT SINK	
* 4	3-919-578-01	PANEL, BACK	

Ref. No.	Part No.	Description	Remark
* 5	A-2007-301-A	TC MAIN BOARD, COMPLETE	
6	4-965-822-01	FOOT	
* 7	3-349-025-41	HOLDER, PC BOARD	

5-2. FRONT PANEL SECTION

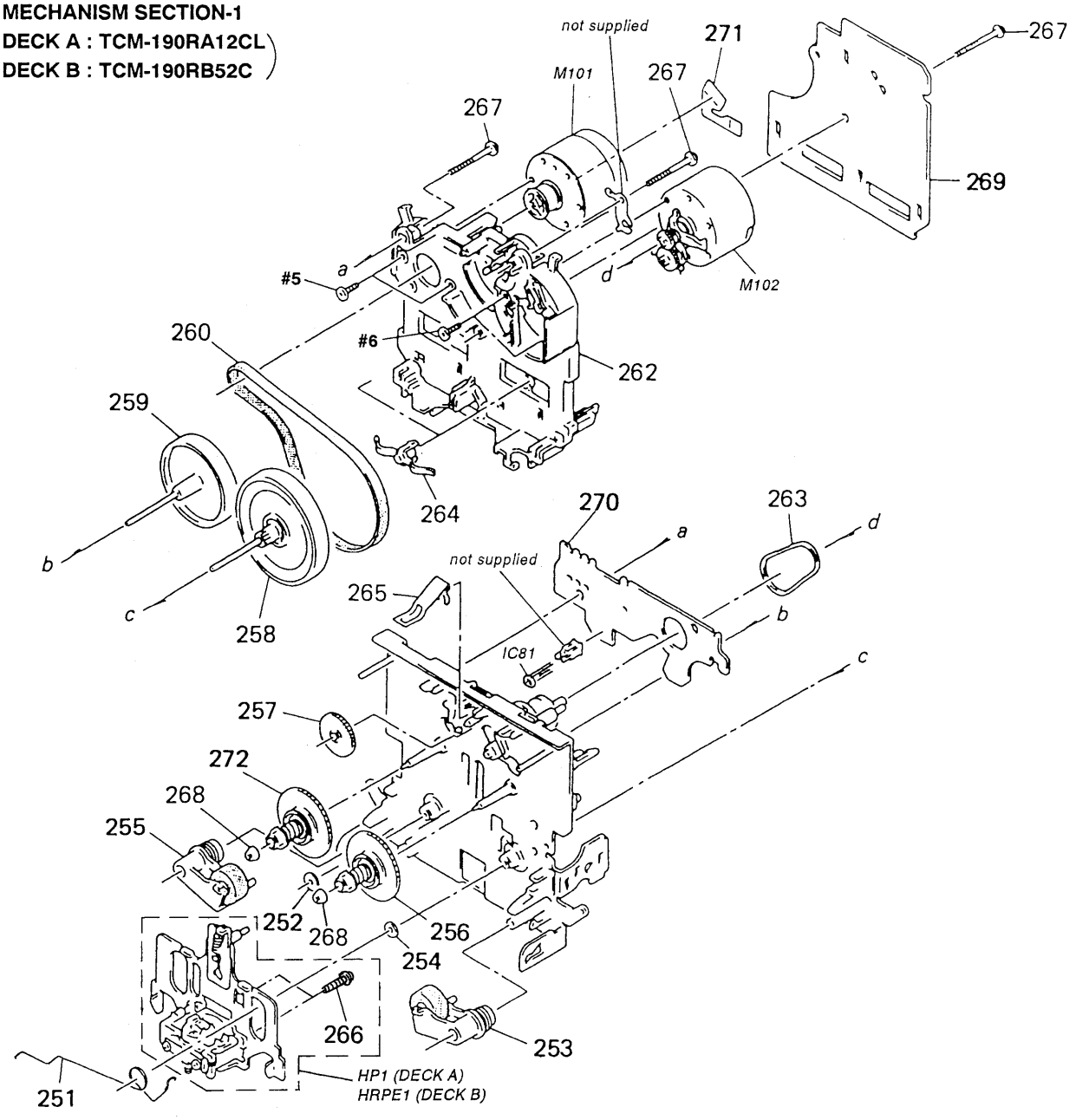


Ref. No.	Part No.	Description	Remark
51	3-919-567-01	WINDOW (DISPLAY)	
52	3-919-571-01	BASE, WINDOW	
53	3-919-566-01	BUTTON (REC)	
54	3-919-577-01	INDICATOR (REC)	
55	3-919-573-01	COVER (AZIMUTH B)	
56	3-919-572-01	COVER (AZIMUTH A)	
57	X-3369-489-1	PANEL ASSY, FRONT	
58	3-919-574-01	SLIDER (L)	
59	3-919-575-01	SLIDER (R)	
60	1-769-390-11	WIRE (FLAT TYPE) (17 CORE)	
61	3-919-576-01	KNOB (SLIDE)	
* 62	A-2007-302-A	TC PANEL BOARD, COMPLETE	
63	X-3369-491-1	LID (B) ASSY, CASSETTE	
64	X-3369-490-1	LID (A) ASSY, CASSETTE	

Ref. No.	Part No.	Description	Remark
65	X-3369-493-1	HOLDER (L) ASSY, CASSETTE	
66	3-354-955-01	LEVER (EJ SAFTY LEVER L)	
67	3-354-961-01	SPRING (EJ SAFTY SPRING L)	
68	3-354-957-01	JOINT (LOCK LEVER)	
* 69	3-354-953-01	LEVER (LOCK LEVER L)	
70	1-765-384-11	WIRE (FLAT TYPE) (7 CORE)	
71	3-354-963-01	DAMPER	
72	4-951-620-01	SCREW (2.6×8), +BVTP	
* 73	3-354-954-01	LEVER (LOCK LEVER R)	
74	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
75	3-354-956-01	LEVER (EJ SAFTY LEVER R)	
76	X-3369-494-1	HOLDER (R) ASSY, CASSETTE	
77	4-959-231-01	SPRING (L), TORSION	
78	4-959-232-01	SPRING (R), TORSION	

5-3. MECHANISM SECTION-1

(DECK A : TCM-190RA12CL
DECK B : TCM-190RB52C)

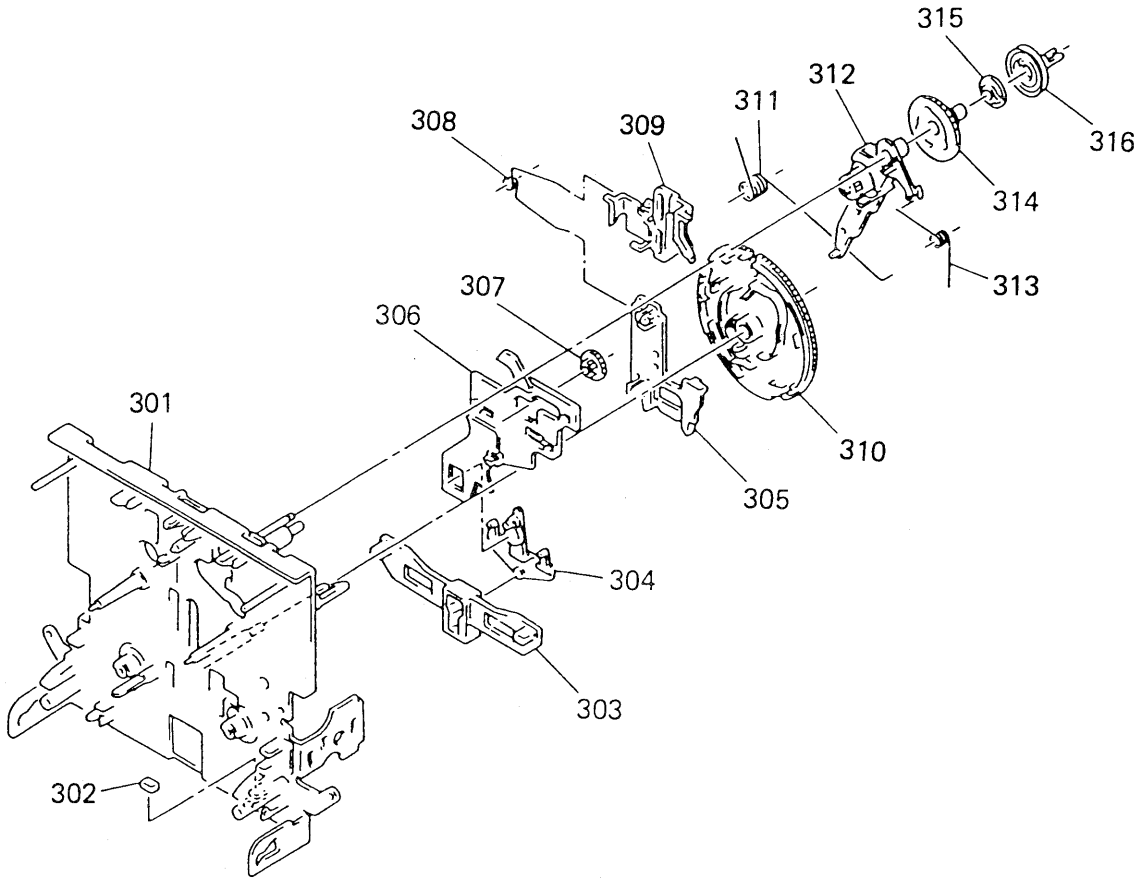


Ref. No.	Part No.	Description	Remark
251	3-907-362-01	SPRING, TORSION	
252	3-356-714-01	WASHER	
253	X-3366-047-1	LEVER (PINCH F) ASSY	
254	3-356-713-01	WASHER	
255	X-3366-048-1	LEVER (PINCH R) ASSY	
256	X-3366-971-1	TABLE ASSY (B), REEL (DECK A)	
256	X-3369-508-1	TABLE (C) ASSY, REEL (DECK B)	
257	3-359-424-01	GEAR (REV GEAR)	
258	X-3367-629-1	FLYWHEEL (FWD) ASSY	
259	X-3359-410-1	FLYWHEEL (REV) ASSY (DECK A)	
259	X-3367-630-1	FLYWHEEL (REV) ASSY (DECK B)	
260	3-359-417-01	BELT (FLAT), CAPSTAN	
262	3-359-436-11	BASE (THRUST RETAINER), FITTING	
263	3-359-466-01	BELT (FR), SQUARE	
264	3-575-321-00	RETAINER, THRUST, CAPSTAN	

Ref. No.	Part No.	Description	Remark
265	3-359-430-01	SPRING(CASSETTE RETAINER), LEAF	
266	3-388-848-01	SCREW (P2×6) (B TIGHT)	
267	3-359-414-01	SCREW (+PTPWH 2×23)	
268	3-362-308-01	CAP (REEL)	
* 269	A-2007-133-A	AUDIO BOARD, COMPLETE (DECK B)	
* 269	A-2007-266-A	AUDIO BOARD, COMPLETE (DECK A)	
* 270	1-638-020-11	LEAF SW BOARD (DECK A) (DECK B)	
271	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
272	X-3366-970-1	TABLE ASSY, REEL	
HP1	A-2003-757-A	BASE ASSY, HEAD (PB) (DECK A)	
HRPE1	A-2003-930-A	BASE ASSY, HEAD (PB/REC/ERASE) (DECK B)	
IC81	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	
M101	X-3365-377-2	MOTOR ASSY (CAPSTAN)	
M102	X-3363-501-2	MOTOR ASSY (REEL)	

5-4. MECHANISM SECTION-2

(DECK A : TCM-190RA12CL
DECK B : TCM-190RB52C)



Ref. No.	Part No.	Description	Remark
301	X-3359-415-1	CHASSIS ASSY, MECHANICAL	
302	3-359-469-01	SPACER	
303	3-359-425-01	SLIDER (REVERSE SLIDER)	
304	3-359-426-01	LEVER (REVERSE LEVER)	
305	3-359-427-01	SLIDER (LEVERSE SLIDER)	
* 306	3-359-415-01	SLIDER (TRIGGER SLIDER) (DECK A)	
306	3-359-415-11	SLIDER (TRIGGER SLIDER) (DECK B)	
307	3-359-448-01	GEAR (TRIGGER)	
308	3-359-454-01	SPRING, TORSION	
309	3-359-429-01	SLIDER (BRAKE PLATE) (DECK A)	
309	3-359-429-11	SLIDER (BRAKE PLATE) (DECK B)	
310	3-359-420-01	GEAR (CAM GEAR)	
311	3-359-456-01	SPRING (TRIGGER SPRING), TORSION	
312	X-3366-569-1	ARM ASSY, FR	
313	3-924-185-11	SPRING (FR ARM), TORSION	
314	3-359-419-11	GEAR (FR GEAR)	
315	3-359-421-01	CLUTCH (REEL DISK)	
316	3-359-418-01	PULLEY (FR PULLEY)	

SECTION 6
ELECTRICAL PARTS LIST

AUDIO (DECK A) AUDIO (DECK B)

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	A-2007-266-A	AUDIO BOARD, COMPLETE (DECK A)			
		**********			
		< CAPACITOR >			
C11	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C12	1-136-157-00	FILM	0.022uF	5%	50V
C13	1-124-234-00	ELECT	22uF	20%	16V
C18	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C21	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C22	1-136-157-00	FILM	0.022uF	5%	50V
C23	1-124-234-00	ELECT	22uF	20%	16V
C28	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C31	1-124-234-00	ELECT	22uF	20%	16V
C32	1-124-234-00	ELECT	22uF	20%	16V
C72	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
		< CONNECTOR >			
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD			
CNJ72	1-764-902-11	CONNECTOR, FFC/FPC 4P			
		< CONNECTOR >			
* CNP32	1-580-772-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< IC >			
IC31	8-759-106-02	IC uPC4570G2			
		< JUMPER RESISTOR >			
JW1	1-216-295-00	METAL CHIP	0	5%	1/10W
JW51	1-216-296-00	METAL CHIP	0	5%	1/8W
JW52	1-216-296-00	METAL CHIP	0	5%	1/8W
JW53	1-216-296-00	METAL CHIP	0	5%	1/8W
JW54	1-216-296-00	METAL CHIP	0	5%	1/8W
		< TRANSISTOR >			
Q71	8-729-216-22	TRANSISTOR 2SA1162-G			
		< RESISTOR >			
R11	1-216-099-00	METAL CHIP	120K	5%	1/10W
R12	1-216-025-91	METAL GLAZE	100	5%	1/10W
R13	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R14	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R21	1-216-099-00	METAL CHIP	120K	5%	1/10W
R22	1-216-025-91	METAL GLAZE	100	5%	1/10W
R23	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R24	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R31	1-216-033-00	METAL CHIP	220	5%	1/10W
R32	1-216-033-00	METAL CHIP	220	5%	1/10W
R71	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W
R73	1-216-089-00	METAL CHIP	47K	5%	1/10W
R74	1-216-089-00	METAL CHIP	47K	5%	1/10W
		< VARIABLE RESISTOR >			
RV11	1-241-761-11	RES, ADJ, CARBON 1K (PLAY BACK LEVEL L-CH)			
RV21	1-241-761-11	RES, ADJ, CARBON 1K (PLAY BACK LEVEL R-CH)			
RV71	1-241-630-11	RES, ADJ, CARBON 10K (TAPE SPEED NORMAL)			
RV72	1-241-630-11	RES, ADJ, CARBON 10K (TAPE SPEED HIGH)			
**********					
*	A-2007-133-A	AUDIO BOARD, COMPLETE (DECK B)			
		**********			
		< CAPACITOR >			
C11	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C12	1-163-117-00	CERAMIC CHIP	100PF	5%	50V

AUDIO (DECK B)

Ref. No.	Part No.	Description			Remark
C13	1-136-153-00	FILM	0.01uF	5%	50V
C14	1-126-177-11	ELECT	100uF	20%	10V
C15	1-124-234-00	ELECT	22uF	20%	16V
C16	1-136-434-11	FILM	120PF	5%	630V
C17	1-164-080-11	CERAMIC	390PF	10%	50V
C18	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C21	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C22	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C23	1-136-153-00	FILM	0.01uF	5%	50V
C24	1-126-177-11	ELECT	100uF	20%	10V
C25	1-124-234-00	ELECT	22uF	20%	16V
C26	1-136-434-11	FILM	120PF	5%	630V
C27	1-164-080-11	CERAMIC	390PF	10%	50V
C28	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C31	1-124-234-00	ELECT	22uF	20%	16V
C32	1-124-234-00	ELECT	22uF	20%	16V
C33	1-124-234-00	ELECT	22uF	20%	16V
C51	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C52	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C53	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C54	1-136-601-11	FILM	0.01uF	5%	630V
C56	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C57	1-164-346-11	CERAMIC CHIP	1uF		16V
C58	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C72	1-109-889-11	ELECT	1uF	20%	50V

< CONNECTOR >

* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD	
* CNJ33	1-580-782-11	CONNECTOR, BOARD TO BOARD	
CNJ72	1-764-902-11	CONNECTOR, FFC/FPC 4P	

< CONNECTOR >

* CNP32	1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P	
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	

< IC >

IC31	8-759-249-21	IC	uPC1330AGR
IC32	8-759-106-02	IC	uPC4570G2

< JUMPER RESISTOR >

JW1	1-216-295-00	METAL CHIP	0	5%	1/10W
JW2	1-216-295-00	METAL CHIP	0	5%	1/10W
JW11	1-216-296-00	METAL CHIP	0	5%	1/8W
JW12	1-216-296-00	METAL CHIP	0	5%	1/8W
JW13	1-216-296-00	METAL CHIP	0	5%	1/8W
JW14	1-216-296-00	METAL CHIP	0	5%	1/8W
JW15	1-216-296-00	METAL CHIP	0	5%	1/8W
JW16	1-216-296-00	METAL CHIP	0	5%	1/8W
JW17	1-216-296-00	METAL CHIP	0	5%	1/8W
JW18	1-216-296-00	METAL CHIP	0	5%	1/8W
JW19	1-216-296-00	METAL CHIP	0	5%	1/8W
JW20	1-216-296-00	METAL CHIP	0	5%	1/8W
JW21	1-216-296-00	METAL CHIP	0	5%	1/8W
JW22	1-216-296-00	METAL CHIP	0	5%	1/8W
JW23	1-216-296-00	METAL CHIP	0	5%	1/8W
JW24	1-216-296-00	METAL CHIP	0	5%	1/8W
JW25	1-216-296-00	METAL CHIP	0	5%	1/8W
JW26	1-216-296-00	METAL CHIP	0	5%	1/8W
JW27	1-216-296-00	METAL CHIP	0	5%	1/8W

< COIL >

L11	1-410-780-11	INDUCTOR	27mH
L21	1-410-780-11	INDUCTOR	27mH

< TRANSISTOR >

Q51	8-729-111-29	TRANSISTOR	2SD1616A-K
Q52	8-729-111-29	TRANSISTOR	2SD1616A-K
Q53	8-729-111-29	TRANSISTOR	2SD1616A-K
Q71	8-729-216-22	TRANSISTOR	2SA1162-G

< RESISTOR >

R11	1-216-099-00	METAL CHIP	120K	5%	1/10W
R12	1-216-033-00	METAL CHIP	220	5%	1/10W
R13	1-216-081-00	METAL CHIP	22K	5%	1/10W
R14	1-216-075-00	METAL CHIP	12K	5%	1/10W
R15	1-216-107-00	METAL CHIP	270K	5%	1/10W
⚠R16	1-249-430-11	CARBON	12K	5%	1/4W F
R21	1-216-099-00	METAL CHIP	120K	5%	1/10W
R22	1-216-033-00	METAL CHIP	220	5%	1/10W
R23	1-216-081-00	METAL CHIP	22K	5%	1/10W
R24	1-216-075-00	METAL CHIP	12K	5%	1/10W
R25	1-216-107-00	METAL CHIP	270K	5%	1/10W
⚠R26	1-249-430-11	CARBON	12K	5%	1/4W F
R31	1-216-033-00	METAL CHIP	220	5%	1/10W
R32	1-216-033-00	METAL CHIP	220	5%	1/10W
R33	1-216-073-00	METAL CHIP	10K	5%	1/10W
⚠R41	1-249-393-11	CARBON	10	5%	1/4W F
⚠R42	1-249-393-11	CARBON	10	5%	1/4W F
R51	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R52	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W
R54	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R55	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R56	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R71	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W
R73	1-216-089-00	METAL CHIP	47K	5%	1/10W
R74	1-216-089-00	METAL CHIP	47K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

AUDIO (DECK B) | LEAF SW (DECK A) | LEAF SW (DECK B) | TC MAIN

Ref.No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RV11	1-241-761-11	RES, ADJ, CARBON 1K (PLAY BACK LEVEL L-CH)	
RV12	1-238-551-11	RES, ADJ, CARBON 220K (REC BIAS L-CH)	
RV21	1-241-761-11	RES, ADJ, CARBON 1K (PLAY BACK LEVEL R-CH)	
RV22	1-238-551-11	RES, ADJ, CARBON 220K (REC BIAS R-CH)	
RV71	1-241-630-11	RES, ADJ, CARBON 10K (TAPE SPEED NORMAL)	
RV72	1-241-630-11	RES, ADJ, CARBON 10K (TAPE SPEED HIGH)	
		< TRANSFORMER >	
T51	1-423-980-11	TRANSFORMER, BIAS OSCILLATION	
**********			
*	1-638-020-11	LEAF SW BOARD (DECK A) **********	
		< CONNECTOR >	
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	
		< IC >	
IC81	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	
		< RESISTOR >	
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-408-11	CARBON 180 5% 1/4W	
		< SWITCH >	
S81	1-571-958-11	SWITCH, PUSH (1 KEY) (STOP DET)	
S82	1-571-281-21	SWITCH, LEAF (70EQ)	
S86	1-571-281-21	SWITCH, LEAF (HALF)	
**********			
*	1-638-020-11	LEAF SW BOARD (DECK B) **********	
		< CONNECTOR >	
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	
		< IC >	
IC81	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	
		< RESISTOR >	
R81	1-249-414-11	CARBON 560 5% 1/4W	
R82	1-247-818-11	CARBON 300 5% 1/4W	
R83	1-247-834-11	CARBON 1.3K 5% 1/4W	
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-408-11	CARBON 180 5% 1/4W	

Ref.No.	Part No.	Description	Remark
		< SWITCH >	
S81	1-571-958-11	SWITCH, PUSH (1 KEY) (STOP DET)	
S82	1-571-281-21	SWITCH, LEAF (70EQ)	
S83	1-571-281-21	SWITCH, LEAF (METAL)	
S84	1-571-281-21	SWITCH, LEAF (ERASE PROOF) (SIDE A)	
S85	1-571-281-21	SWITCH, LEAF (ERASE PROOF) (SIDE B)	
S86	1-571-281-21	SWITCH, LEAF (HALF)	
**********			
*	A-2007-301-A	TC MAIN BOARD, COMPLETE **********	
		< CAPACITOR >	
C104	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C105	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C106	1-124-925-11	ELECT 2.2uF 20% 100V	
C107	1-136-174-00	FILM 0.56uF 5% 50V	
C108	1-136-171-00	FILM 0.33uF 5% 50V	
C109	1-124-925-11	ELECT 2.2uF 20% 100V	
C110	1-124-925-11	ELECT 2.2uF 20% 100V	
C114	1-124-907-11	ELECT 10uF 20% 50V	
C115	1-124-443-00	ELECT 100uF 20% 10V	
C116	1-162-282-31	CERAMIC 100PF 10% 50V	
C117	1-124-925-11	ELECT 2.2uF 20% 100V	
C119	1-124-902-00	ELECT 0.47uF 20% 50V	
C120	1-124-927-11	ELECT 4.7uF 20% 100V	
C130	1-162-282-31	CERAMIC 100PF 10% 50V	
C131	1-162-282-31	CERAMIC 100PF 10% 50V	
C132	1-124-903-11	ELECT 1uF 20% 50V	
C133	1-162-286-21	CERAMIC 220PF 10% 50V	
C204	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C205	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C206	1-124-925-11	ELECT 2.2uF 20% 100V	
C207	1-136-174-00	FILM 0.56uF 5% 50V	
C208	1-136-171-00	FILM 0.33uF 5% 50V	
C209	1-124-925-11	ELECT 2.2uF 20% 100V	
C210	1-124-925-11	ELECT 2.2uF 20% 100V	
C214	1-124-907-11	ELECT 10uF 20% 50V	
C215	1-124-443-00	ELECT 100uF 20% 10V	
C216	1-162-282-31	CERAMIC 100PF 10% 50V	
C217	1-124-925-11	ELECT 2.2uF 20% 100V	
C219	1-124-902-00	ELECT 0.47uF 20% 50V	
C220	1-124-927-11	ELECT 4.7uF 20% 100V	
C230	1-162-282-31	CERAMIC 100PF 10% 50V	
C231	1-162-282-31	CERAMIC 100PF 10% 50V	
C232	1-124-903-11	ELECT 1uF 20% 50V	
C233	1-162-286-21	CERAMIC 220PF 10% 50V	
C502	1-128-489-11	ELECT 3300uF 20% 16V	

TC MAIN

Ref. No.	Part No.	Description			Remark
C504	1-128-489-11	ELECT	3300uF	20%	16V
C518	1-126-927-11	ELECT	2200uF	20%	10V
C519	1-126-927-11	ELECT	2200uF	20%	10V
C529	1-136-157-00	FILM	0.022uF	5%	50V
C530	1-136-157-00	FILM	0.022uF	5%	50V
C533	1-136-157-00	FILM	0.022uF	5%	50V
C534	1-136-157-00	FILM	0.022uF	5%	50V
C535	1-124-360-00	ELECT	1000uF	20%	16V
C536	1-124-360-00	ELECT	1000uF	20%	16V
C537	1-124-472-11	ELECT	470uF	20%	10V
C538	1-124-472-11	ELECT	470uF	20%	10V
C540	1-124-473-11	ELECT	1000uF	20%	10V
C550	1-162-282-31	CERAMIC	100PF	10%	50V
C601	1-124-443-00	ELECT	100uF	20%	10V
C602	1-164-159-11	CERAMIC	0.1uF		50V
C604	1-164-159-11	CERAMIC	0.1uF		50V
C605	1-124-902-00	ELECT	0.47uF	20%	50V
C606	1-124-480-11	ELECT	470uF	20%	25V
C607	1-124-480-11	ELECT	470uF	20%	25V
C608	1-124-480-11	ELECT	470uF	20%	25V
C609	1-124-902-00	ELECT	0.47uF	20%	50V
C610	1-124-472-11	ELECT	470uF	20%	10V
C611	1-162-290-31	CERAMIC	470PF	10%	50V
C612	1-124-472-11	ELECT	470uF	20%	10V
C613	1-162-290-31	CERAMIC	470PF	10%	50V
C614	1-164-159-11	CERAMIC	0.1uF		50V
C615	1-164-159-11	CERAMIC	0.1uF		50V
C616	1-124-910-11	ELECT	47uF	20%	50V
C617	1-164-159-11	CERAMIC	0.1uF		50V
C620	1-124-907-11	ELECT	10uF	20%	50V
C621	1-124-907-11	ELECT	10uF	20%	50V
C622	1-124-477-11	ELECT	47uF	20%	25V
C623	1-124-477-11	ELECT	47uF	20%	25V
C630	1-124-927-11	ELECT	4.7uF	20%	100V
C631	1-124-903-11	ELECT	1uF	20%	50V
C636	1-124-916-11	ELECT	22uF	20%	63V
C641	1-124-927-11	ELECT	4.7uF	20%	100V
C642	1-124-902-00	ELECT	0.47uF	20%	50V
C645	1-124-907-11	ELECT	10uF	20%	50V
C646	1-124-925-11	ELECT	2.2uF	20%	100V
C649	1-124-907-11	ELECT	10uF	20%	50V
C650	1-124-916-11	ELECT	22uF	20%	63V
C651	1-124-443-00	ELECT	100uF	20%	10V
C800	1-162-282-31	CERAMIC	100PF	10%	50V
C6035	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< CONNECTOR >			
CN601	1-695-330-31	PIN, CONNECTOR (PC BOARD) 7P			
* CN602	1-691-916-11	CONNECTOR, BOARD TO BOARD			
CN603	1-695-330-31	PIN, CONNECTOR (PC BOARD) 7P			
* CN604	1-691-916-11	CONNECTOR, BOARD TO BOARD			
* CN605	1-691-916-11	CONNECTOR, BOARD TO BOARD			
CN608	1-770-166-11	CONNECTOR, FFC/FPC 17P			
CN609	1-770-158-21	SOCKET, CONNECTOR 7P (SYSTEM CONTROL)			
* CN610	1-565-561-11	PIN, CONNECTOR 3P (AU BUS)			
		< DIODE >			
D508	8-719-200-02	DIODE	10E2		
D509	8-719-200-02	DIODE	10E2		
D510	8-719-200-02	DIODE	10E2		
D511	8-719-200-02	DIODE	10E2		
D512	8-719-200-02	DIODE	10E2		
D513	8-719-200-02	DIODE	10E2		
D519	8-719-200-02	DIODE	10E2		
D522	8-719-200-02	DIODE	10E2		
D523	8-719-987-63	DIODE	1N4148M		
D524	8-719-987-63	DIODE	1N4148M		
D525	8-719-200-02	DIODE	10E2		
D526	8-719-200-02	DIODE	10E2		
D601	8-719-987-63	DIODE	1N4148M		
D602	8-719-987-63	DIODE	1N4148M		
D603	8-719-987-63	DIODE	1N4148M		
D604	8-719-987-63	DIODE	1N4148M		
D605	8-719-200-02	DIODE	10E2		
D606	8-719-200-02	DIODE	10E2		
D607	8-719-987-63	DIODE	1N4148M		
D608	8-719-987-63	DIODE	1N4148M		
D609	8-719-987-63	DIODE	1N4148M		
D610	8-719-200-02	DIODE	10E2		
D611	8-719-987-63	DIODE	1N4148M		
D620	8-719-010-05	DIODE	UZ-2.0BSB		
		< IC >			
IC101	8-752-058-57	IC	CXA1599Q		
IC102	8-759-939-73	IC	BA3308		
IC103	8-752-059-55	IC	CXA1331S		
IC104	8-759-337-73	IC	M38123M4-118FP		
IC502	8-759-231-53	IC	TA7805S		
IC503	8-759-604-86	IC	M5F7807		
IC504	8-759-604-90	IC	M5F7907L		
IC505	8-759-604-86	IC	M5F7807		
IC506	8-759-604-90	IC	M5F7907L		
IC602	8-759-510-54	IC	PST572D		
IC603	8-759-266-35	IC	TA8242AK		
IC6004	8-759-000-48	IC	MC14052BCP		

Ref.No.	Part No.	Description			Remark
		< COIL >			
L101	1-410-470-11	INDUCTOR	10uH		
L102	1-410-470-11	INDUCTOR	10uH		
L601	1-410-482-31	INDUCTOR	100uH		
L6002	1-410-470-11	INDUCTOR	10uH		
		< JACK >			
PJ101	1-695-188-31	JACK, PIN 4P (TAPE-1)			
		< TRANSISTOR >			
Q101	8-729-107-85	TRANSISTOR	2SC3623A-K		
Q122	8-729-900-89	TRANSISTOR	DTC144ES		
Q201	8-729-107-85	TRANSISTOR	2SC3623A-K		
Q222	8-729-900-89	TRANSISTOR	DTC144ES		
Q603	8-729-801-93	TRANSISTOR	2SD1387		
Q604	8-729-801-93	TRANSISTOR	2SD1387		
Q605	8-729-900-80	TRANSISTOR	DTC114ES		
Q607	8-729-900-89	TRANSISTOR	DTC144ES		
Q608	8-729-900-89	TRANSISTOR	DTC144ES		
Q609	8-729-900-89	TRANSISTOR	DTC144ES		
Q611	8-729-107-85	TRANSISTOR	2SC3623A-K		
Q612	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q613	8-729-900-65	TRANSISTOR	DTA144ES		
Q614	8-729-900-89	TRANSISTOR	DTC144ES		
Q620	8-729-900-89	TRANSISTOR	DTC144ES		
Q621	8-729-900-65	TRANSISTOR	DTA144ES		
Q627	8-729-900-89	TRANSISTOR	DTC144ES		
Q630	8-729-900-61	TRANSISTOR	DTA114ES		
Q802	8-729-900-80	TRANSISTOR	DTC114ES		
Q803	8-729-900-80	TRANSISTOR	DTC114ES		
Q804	8-729-900-80	TRANSISTOR	DTC114ES		
Q805	8-729-900-80	TRANSISTOR	DTC114ES		
		< RESISTOR >			
R106	1-247-832-11	CARBON	1.1K	5%	1/4W
R107	1-247-864-11	CARBON	24K	5%	1/4W
R108	1-249-414-11	CARBON	560	5%	1/4W
R109	1-249-429-11	CARBON	10K	5%	1/4W
R110	1-249-427-11	CARBON	6.8K	5%	1/4W
R111	1-249-427-11	CARBON	6.8K	5%	1/4W
R112	1-247-832-11	CARBON	1.1K	5%	1/4W
R113	1-249-429-11	CARBON	10K	5%	1/4W
R114	1-249-421-11	CARBON	2.2K	5%	1/4W
R115	1-247-887-00	CARBON	220K	5%	1/4W
R116	1-249-437-11	CARBON	47K	5%	1/4W
R117	1-249-415-11	CARBON	680	5%	1/4W
R118	1-249-439-11	CARBON	68K	5%	1/4W
R119	1-249-415-11	CARBON	680	5%	1/4W

Ref.No.	Part No.	Description			Remark
R120	1-247-807-31	CARBON	100	5%	1/4W
R121	1-247-807-31	CARBON	100	5%	1/4W
R122	1-249-422-11	CARBON	2.7K	5%	1/4W
R206	1-247-832-11	CARBON	1.1K	5%	1/4W
R207	1-247-864-11	CARBON	24K	5%	1/4W
R208	1-249-414-11	CARBON	560	5%	1/4W
R209	1-249-429-11	CARBON	10K	5%	1/4W
R210	1-249-427-11	CARBON	6.8K	5%	1/4W
R211	1-249-427-11	CARBON	6.8K	5%	1/4W
R212	1-247-832-11	CARBON	1.1K	5%	1/4W
R213	1-249-429-11	CARBON	10K	5%	1/4W
R214	1-249-421-11	CARBON	2.2K	5%	1/4W
R215	1-247-887-00	CARBON	220K	5%	1/4W
R216	1-249-437-11	CARBON	47K	5%	1/4W
R217	1-249-415-11	CARBON	680	5%	1/4W
R218	1-249-439-11	CARBON	68K	5%	1/4W
R219	1-249-415-11	CARBON	680	5%	1/4W
R220	1-247-807-31	CARBON	100	5%	1/4W
R221	1-247-807-31	CARBON	100	5%	1/4W
R222	1-249-422-11	CARBON	2.7K	5%	1/4W
R504	1-247-807-31	CARBON	100	5%	1/4W
R505	1-249-429-11	CARBON	10K	5%	1/4W
R506	1-249-393-11	CARBON	10	5%	1/4W
R601	1-247-807-31	CARBON	100	5%	1/4W
R602	1-247-807-31	CARBON	100	5%	1/4W
R606	1-249-435-11	CARBON	33K	5%	1/4W
R607	1-247-807-31	CARBON	100	5%	1/4W
R615	1-247-807-31	CARBON	100	5%	1/4W
R616	1-247-863-91	CARBON	22K	5%	1/4W
R620	1-249-441-11	CARBON	100K	5%	1/4W
R621	1-249-417-11	CARBON	1K	5%	1/4W
R622	1-249-421-11	CARBON	2.2K	5%	1/4W
R623	1-249-421-11	CARBON	2.2K	5%	1/4W
R624	1-249-434-11	CARBON	27K	5%	1/4W
R625	1-249-421-11	CARBON	2.2K	5%	1/4W
R626	1-249-421-11	CARBON	2.2K	5%	1/4W
R627	1-249-421-11	CARBON	2.2K	5%	1/4W
R628	1-249-434-11	CARBON	27K	5%	1/4W
R629	1-249-421-11	CARBON	2.2K	5%	1/4W
R630	1-249-429-11	CARBON	10K	5%	1/4W
R631	1-249-421-11	CARBON	2.2K	5%	1/4W
R632	1-249-429-11	CARBON	10K	5%	1/4W
R633	1-247-807-31	CARBON	100	5%	1/4W
R634	1-247-807-31	CARBON	100	5%	1/4W
R637	1-249-414-11	CARBON	560	5%	1/4W
R640	1-249-428-11	CARBON	8.2K	5%	1/4W
R641	1-249-409-11	CARBON	220	5%	1/4W
R642	1-249-421-11	CARBON	2.2K	5%	1/4W
R643	1-247-807-31	CARBON	100	5%	1/4W

TC MAIN | TC PANEL

Ref.No.	Part No.	Description			Remark
R644	1-247-807-31	CARBON	100	5%	1/4W
R648	1-249-437-11	CARBON	47K	5%	1/4W
R649	1-249-437-11	CARBON	47K	5%	1/4W
R650	1-249-437-11	CARBON	47K	5%	1/4W
R656	1-249-393-11	CARBON	10	5%	1/4W
R660	1-249-417-11	CARBON	1K	5%	1/4W
R661	1-249-434-11	CARBON	27K	5%	1/4W
R670	1-247-863-91	CARBON	22K	5%	1/4W
R673	1-249-429-11	CARBON	10K	5%	1/4W
R674	1-247-860-11	CARBON	16K	5%	1/4W
R675	1-249-429-11	CARBON	10K	5%	1/4W
R676	1-249-434-11	CARBON	27K	5%	1/4W
R677	1-247-807-31	CARBON	100	5%	1/4W
R678	1-247-807-31	CARBON	100	5%	1/4W
R679	1-247-807-31	CARBON	100	5%	1/4W
R680	1-249-441-11	CARBON	100K	5%	1/4W
R681	1-249-429-11	CARBON	10K	5%	1/4W
R682	1-249-429-11	CARBON	10K	5%	1/4W
R683	1-249-429-11	CARBON	10K	5%	1/4W
R684	1-249-413-11	CARBON	470	5%	1/4W
R685	1-249-429-11	CARBON	10K	5%	1/4W
R686	1-249-429-11	CARBON	10K	5%	1/4W
R687	1-249-417-11	CARBON	1K	5%	1/4W
R689	1-247-872-11	CARBON	51K	5%	1/4W
R690	1-249-429-11	CARBON	10K	5%	1/4W
R691	1-249-425-11	CARBON	4.7K	5%	1/4W
R693	1-247-863-91	CARBON	22K	5%	1/4W
R694	1-247-863-91	CARBON	22K	5%	1/4W
R695	1-249-421-11	CARBON	2.2K	5%	1/4W
R696	1-249-421-11	CARBON	2.2K	5%	1/4W
R700	1-247-903-00	CARBON	1M	5%	1/4W
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-249-437-11	CARBON	47K	5%	1/4W
R801	1-249-417-11	CARBON	1K	5%	1/4W
R802	1-247-807-31	CARBON	100	5%	1/4W
R803	1-247-807-31	CARBON	100	5%	1/4W
R804	1-247-807-31	CARBON	100	5%	1/4W
R805	1-247-807-31	CARBON	100	5%	1/4W
R807	1-247-863-91	CARBON	22K	5%	1/4W
R808	1-249-429-11	CARBON	10K	5%	1/4W
R809	1-249-429-11	CARBON	10K	5%	1/4W
R810	1-249-429-11	CARBON	10K	5%	1/4W
R813	1-249-411-11	CARBON	330	5%	1/4W
R814	1-249-411-11	CARBON	330	5%	1/4W
R815	1-249-411-11	CARBON	330	5%	1/4W
R816	1-249-411-11	CARBON	330	5%	1/4W
R817	1-249-411-11	CARBON	330	5%	1/4W
R818	1-249-435-11	CARBON	33K	5%	1/4W
R819	1-249-393-11	CARBON	10	5%	1/4W
R820	1-249-417-11	CARBON	1K	5%	1/4W
R821	1-249-417-11	CARBON	1K	5%	1/4W
R822	1-249-417-11	CARBON	1K	5%	1/4W
R823	1-249-425-11	CARBON	4.7K	5%	1/4W
R6070	1-249-421-11	CARBON	2.2K	5%	1/4W
R6071	1-249-421-11	CARBON	2.2K	5%	1/4W
		< VARIABLE RESISTOR >			
RV101	1-238-600-11	RES, ADJ, CARBON 10K			
RV201	1-238-600-11	RES, ADJ, CARBON 10K			
		< VIBRATOR >			
X601	1-577-358-21	VIBRATOR, CERAMIC			
**********					
*	A-2007-302-A	TC PANEL BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
CN900	1-770-169-11	CONNECTOR, FFC/FPC 17P			
		< DIODE >			
D900	8-719-046-42	LED SEL5421E-TH8F (DECK A ▷)			
D901	8-719-046-42	LED SEL5421E-TH8F (◁ DECK A)			
D902	8-719-046-42	LED SEL5421E-TH8F (DECK B ▷)			
D903	8-719-046-42	LED SEL5421E-TH8F (◁ DECK B)			
D906	8-719-046-44	LED SEL5221S-TP15 (CD SYNCHRO)			
D907	8-719-046-44	LED SEL5221S-TP15 (HIGHT)			
D908	8-719-046-44	LED SEL5221S-TP15 (NORMAL)			
D909	8-719-046-36	LED SEL5921A-TH15 (❚❚)			
D910	8-719-046-44	LED SEL5221S-TP15 (REC)			
		< RESISTOR >			
R900	1-249-418-11	CARBON	1.2K	5%	1/4W
R901	1-249-420-11	CARBON	1.8K	5%	1/4W
R902	1-249-422-11	CARBON	2.7K	5%	1/4W
R903	1-249-424-11	CARBON	3.9K	5%	1/4W
R904	1-249-427-11	CARBON	6.8K	5%	1/4W
R905	1-249-418-11	CARBON	1.2K	5%	1/4W
R906	1-249-420-11	CARBON	1.8K	5%	1/4W
R907	1-249-422-11	CARBON	2.7K	5%	1/4W
R908	1-249-424-11	CARBON	3.9K	5%	1/4W
R909	1-249-427-11	CARBON	6.8K	5%	1/4W
R910	1-249-431-11	CARBON	15K	5%	1/4W
R911	1-249-437-11	CARBON	47K	5%	1/4W
R914	1-249-426-11	CARBON	5.6K	5%	1/4W
R915	1-249-434-11	CARBON	27K	5%	1/4W
R916	1-249-425-11	CARBON	4.7K	5%	1/4W

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S900	1-762-205-11	SWITCH, SLIDE (DIRECTION MODE)	
S901	1-762-205-11	SWITCH, SLIDE (DOLBY NR)	
S902	1-554-303-21	SWITCH, TACTILE (□)	
S903	1-554-303-21	SWITCH, TACTILE (▷)	
S904	1-554-303-21	SWITCH, TACTILE (◁)	
S905	1-554-303-21	SWITCH, TACTILE (❚❚PAUSE)	
S906	1-554-303-21	SWITCH, TACTILE (AMS/◀◀)	
S907	1-554-303-21	SWITCH, TACTILE (AMS/▶▶)	
S908	1-554-303-21	SWITCH, TACTILE (□)	
S909	1-554-303-21	SWITCH, TACTILE (▷)	
S910	1-554-303-21	SWITCH, TACTILE (◁)	
S911	1-554-303-21	SWITCH, TACTILE (AMS/◀◀)	
S912	1-554-303-21	SWITCH, TACTILE (AMS/▶▶)	
S913	1-554-303-21	SWITCH, TACTILE (●REC)	
S915	1-554-303-21	SWITCH, TACTILE (DUBBING MODE)	
S916	1-554-303-21	SWITCH, TACTILE (CD SYNCHRO)	
S917	1-554-303-21	SWITCH, TACTILE (○REC MUTE)	
**********			
		MISCELLANEOUS	
		**********	
60	1-769-390-11	WIRE (FLAT TYPE) (17 CORE)	
70	1-765-384-11	WIRE (FLAT TYPE) (7 CORE)	
271	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
HP1	A-2003-757-A	BASE ASSY, HEAD (PB) (DECK A)	
HRPE1	A-2003-930-A	BASE ASSY, HEAD (PB/REC/ERASE) (DECK B)	
IC81	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	
M101	X-3365-377-2	MOTOR ASSY (CAPSTAN)	
M102	X-3363-501-2	MOTOR ASSY (REEL)	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3×8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3×6 (S)	
#3	7-621-770-67	SCREW +PTT 2.6×6 (S)	
#4	7-685-862-04	SCREW +BVTT 2.6×6 (S)	
#5	7-621-775-00	SCREW +B 2.6×3	
#6	7-627-556-08	SCREW +P 2.6×2.8	

9-960-061-11

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Home A&V Products Div.

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ST-EX10

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

This set the tuner section in
MHC-EX5, EX7, EX9AV, EX10AV.

SPECIFICATIONS

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range
East European model :
FM1 : 65-74MHz
FM2 : 87.5-108MHz
EXCEPT East European model : 87.5 – 108.0 MHz
(50kHz step)
Antenna terminals 75 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section

Tuning range
AEP, UK, East European, German model :
MW : 531-1,602kHz
LW : 153-279kHz
Italian model :
MW : 522-1,611kHz (9kHz step)
LW : 153-279kHz
E, Saudi Arabia, Hong Kong, Mexican, Malaysia, Singapore, Australian, Tourist model :
MW : 531-1,602kHz (9kHz step)
530-1,710kHz (10kHz step)
SW : 5.95-17.9kHz
(E3, Saudi Arabia, Hong Kong, Malaysia, Singapore, Tourist model)
Aerial AM loop aerial
External aerial terminals
Intermediate frequency
450 kHz

Dimensions
Approx. 280 x 85 x 290 mm (w/h/d)
(11 1/8 x 3 3/8 x 11 1/2 inches)
Mass Approx. 1.6 kg (3 lb 9 oz)

STEREO TUNER

SONY®

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICING NOTE

• POWER SUPPLIED WHILE SERVICING

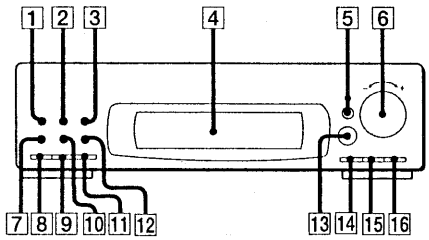
This unit does not work independently because of not having the power supply.
It must be unite together with the other units when repaired.

SECTION 1
GENERAL

This section is extracted from instruction manual.

Front Panel

Tuner



1 EON (Enhanced Other Networks) button
2 PTY (Programme Type) button
(AEP, UK, German, Italian, East European model)

1 MEMORY button
2 STEREO/MONO button
(Australian, E, Saudi Arabia, Mexican, Malaysia, Singapore, Hong Kong, Tourist, CIS model)

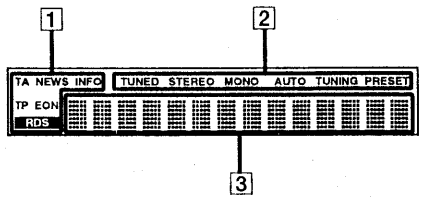
3 DISPLAY button
4 Display window button
5 ENTER/NEXT button
6 MULTI CONTROLLER
7 DAILY button
8 TIMER SET button
9 CLOCK SET button
10 REC button
11 CHARACTER button
12 SLEEP button
13 BAND button

14 STEREO/MONO button
15 TUNING MODE button
16 MEMORY button
(AEP, UK, German, Italian, East European model)

14 MANUAL button (TUNING MODE)
15 AUTO button (TUNING MODE)
16 PRESET button (TUNING MODE)
(Australian, E, Saudi Arabia, Mexican, Malaysia, Singapore, Hong Kong, Tourist, CIS model)

Display Window

Tuner



1 RDS service indications
2 Tuner indication
3 Frequency/station name/time/timer indication

SECTION 2
ELECTRICAL ADJUSTMENTS

Precautions in Repairing

If the front unit fails, it is difficult to repair the inner circuits, so replace the entire front end unit.

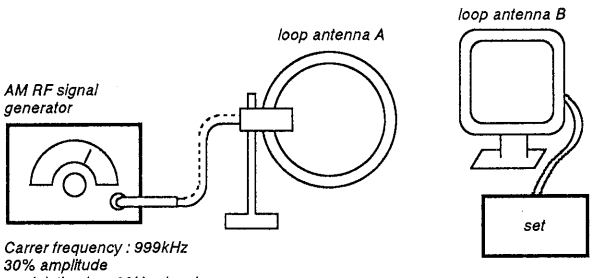
The FM TUNED level must be adjusted after the AM TUNED level adjustment has completed.

AM SECTION

AM Tuning Level Adjustment

Setting :

BAND switch : MW (AM)



Procedure :

1. Set loop antenna A so that the loop antenna B input level becomes 55dBμ/m .
2. Tune the set to 999kHz.
3. Adjust RV1 so that the TUNED indicator goes on.

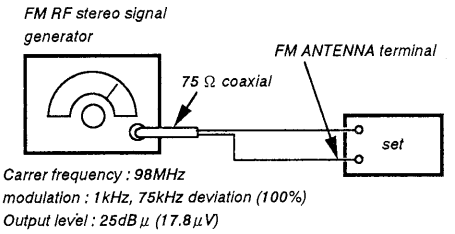
Adjustment Location : MAIN board. (See page 4)

FM SECTION

FM Tuning Level Adjustment

Setting :

BAND switch : FM



Procedure :

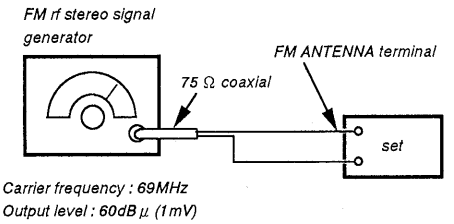
1. Tune the set to 98MHz.
2. Adjust RV2 so that the TUNED indicator goes on.

Adjustment Location : MAIN board. (See page 4)

FM POLAR Adjustment (CIS model only)

Setting :

BAND switch : FM



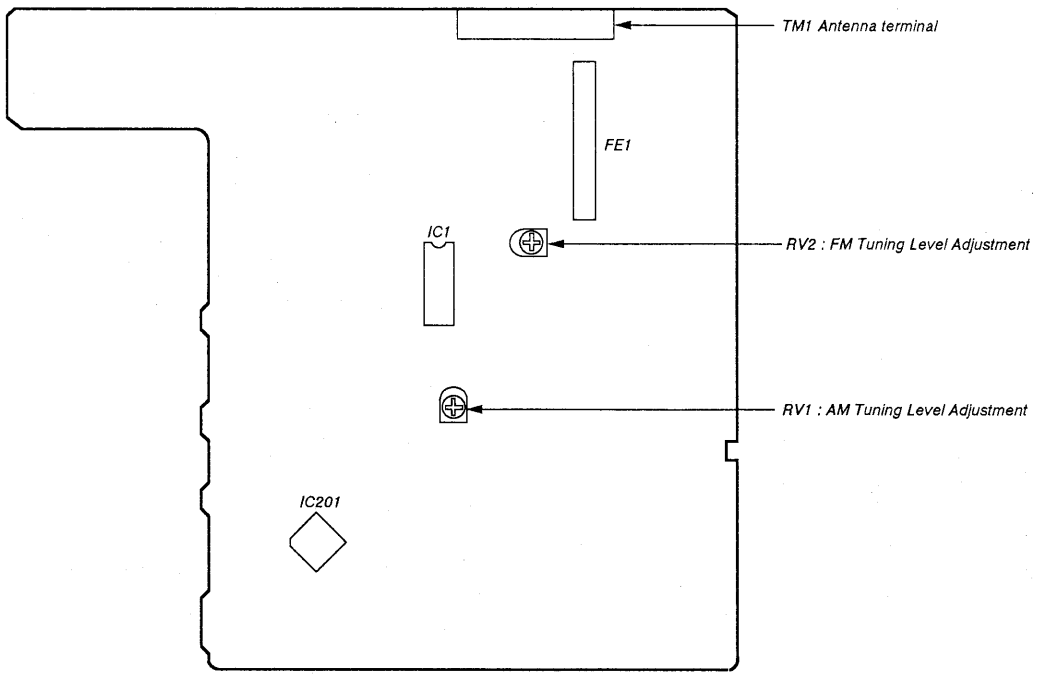
Procedure :

1. Connect the frequency counter to the TP1702 and adjust the RV1702 for a frequency of 31.25kHz ± 50Hz.
2. Connect the VTVM to the TP1701, receive the signal of 69MHz ± 1kHz (1kHz dev.) and adjust the reading of the VTVM to 0dB.
3. Set the modulation frequency of the FM RF signal generator to 31.25kHz (10kHz dev.) and adjust the L1701 and CT1701 so that the reading of the VTVM is 0dB.
4. Adjust the RV1701 so that the reading of the VTVM to 14dB.
5. Check that the separation between pins 13 and 11 of the CN1701 is more than 18dB.

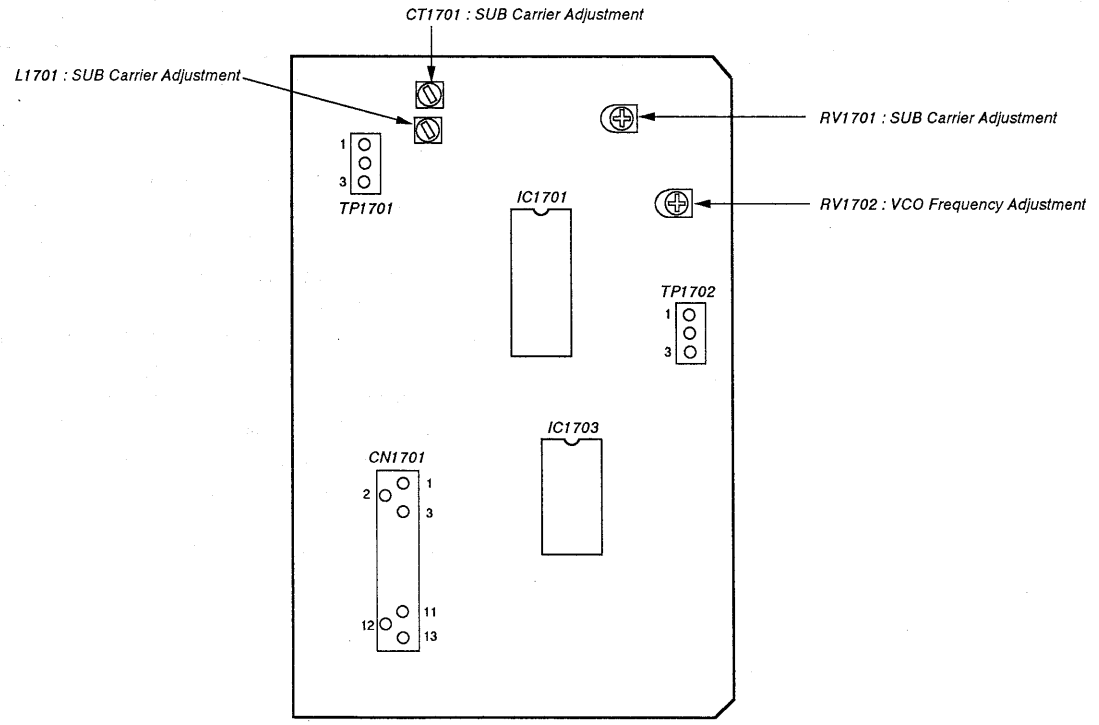
Adjustment Location : POLAR board. (See page 4)

Adjustment Location :

【MAIN BOARD 】 – Component side –



【POLAR BOARD 】 – Component side –



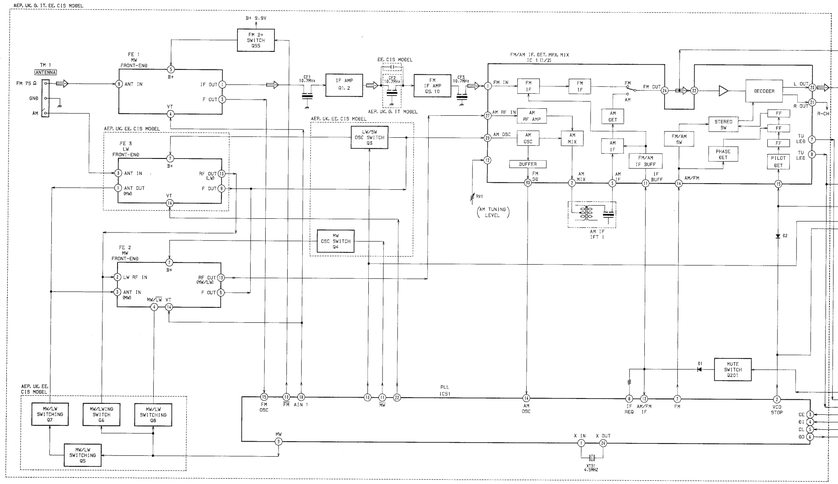
SECTION 3
EXPLANATION OF IC TERMINALS

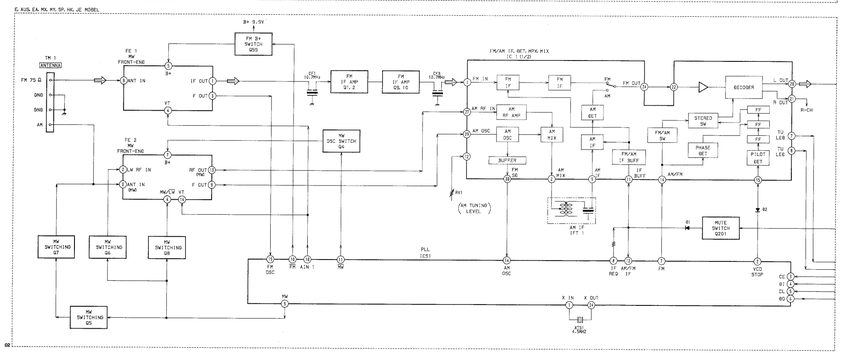
IC201 μPD78013GC

Pin No.	Pin name	I/O	Description
1 – 4	MODEL	I	Model selection.
5	IF+50	I	Not used. (GND connected)
6	IF – 50	O	Not used. (GND connected)
7	BACK UP	I	Back up mode input terminal.
8	NC	–	Not used.
9	V_{SS}	–	Power supply (GND).
10	$\overline{POWER}$	O	Power ON/OFF control.
11	MUTE	O	Mute signal output terminal.
12	ANLOG BUS	–	Since it is not used.
13	NC	–	Not used. (Open)
14	NC	–	Not used. (Open)
15	AM MONO	–	Since it is not used.
16	AM/FM	–	Since it is not used.
17	IFNG	–	Since it is not used.
18	STEREO	I	FM/AM stereo identification. L : Stereo
19	SIGNAL	I	FM/AM tuning identification. L : Tuning
20	DATA IN	I	Serial data input from tuner. (PLL IC)
21	DATA OUT	O	Serial data output to tuner. (PLL IC)
22	CLOCK	O	System clock output to tuner. (PLL IC)
23	CE	O	Chip enable output to tuner. (PLL IC)
24	V_{SS}	–	Power supply. (GND)
25	NC	–	Not used. (Open)
26	NC	–	Not used. (Open)
27	ONCE	O	Once LED drive. (Since it is not used)
28	DAILY	O	Daily LED drive.
29	REC	O	REC LED drive.
30	SLEEP	O	Sleep LED drive.
31	ENCODER	O	Encoder LED drive.
32	NEXT	O	Next LED drive.
33	ENCODER IN B	I	Encoder B input terminal.
34	AU BUS OUT	O	Audio bus output terminal.
35	RESET	I	Reset terminal.
36	AU BUS IN	I	Audio bus input terminal.
37	EMCODER IN A	I	Encoder A input termihal.
38	RDS-CLOCK	I	RDS clock input termihal.
39	RDS-DATA	I	RDS data input termihal.
40	V_{DD}	–	Power supply. (+5V)
41	X2	O	System main clock. (10MHz)
42	X1	I	System main clock. (10MHz)
43	GND	–	Power supply. (GND)
44	XT2	O	System sub clock. (32.768kHz)
45	XT1	I	System sub clock. (32.768kHz)

Pin No.	Pin name	I/O	Description
46	GND	–	Power supply. (GND)
47	KEY IN K1	I	Key input terminal.
48	KEY IN K2	I	Key input terminal.
49	KEY IN	I	Key input terminal. (Since it is not used, it is +5V connected)
50	GND	–	Power supply. (GND)
51	GND	–	Power supply. (GND)
52	GND	–	Power supply. (GND)
53	GND	–	Power supply. (GND)
54	GND	–	Power supply. (GND)
55	AV_{DD}	–	Analog power supply. (+5V)
56	AV_{REF}	–	Analog reference voltage terminal.
57	GND	–	Analog power supply. (GND)
58	S DATA	O	Serial data output to FL DRIVER. (M66004FP)
59	SCK	O	System clock output to FL DRIVER. (M66004FP)
60	$\overline{CS}$	O	Serial Chip select output to FL DRIVER. (M66004FP)
61	RESET	O	Reset signal output to FL DRIVER. (M66004FP)
62	ERRORS	I	Serial data input terminal.
63	CORRECTION	O	Serial data output terminal.
64	RECEIVED	O	System clock output terminal.

4-1. BLOCK DIAGRAM





- Signal path.
  ⇨ : FM
- Abbreviation

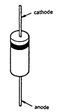
EE	: East European	EA	: Saudi Arabia
JE	: Tourist	MX	: Mexican
IT	: Italian	MY	: Malaysia
G	: German	SP	: Singapore
AUS	: Australian	HK	: Hong Kong

● SEMICONDUCTOR LEAD LAYOUTS

DTA114ES
DTC114ES
2SC2603-EF
2SC2669-OY

2SK246-GR3

UZP-4.7B

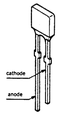


UN4111
2SA1175-HFE

LETTER SIDE

HZS7B3L
UZL-6L3
UZL-7M1-TA
UZL-27H
11ES2

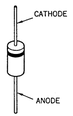
SEL5420E-TP15



TLO124

2SB1094-LK
2SD2012

UZL-11M1-TA
1N4148M
1SS1585



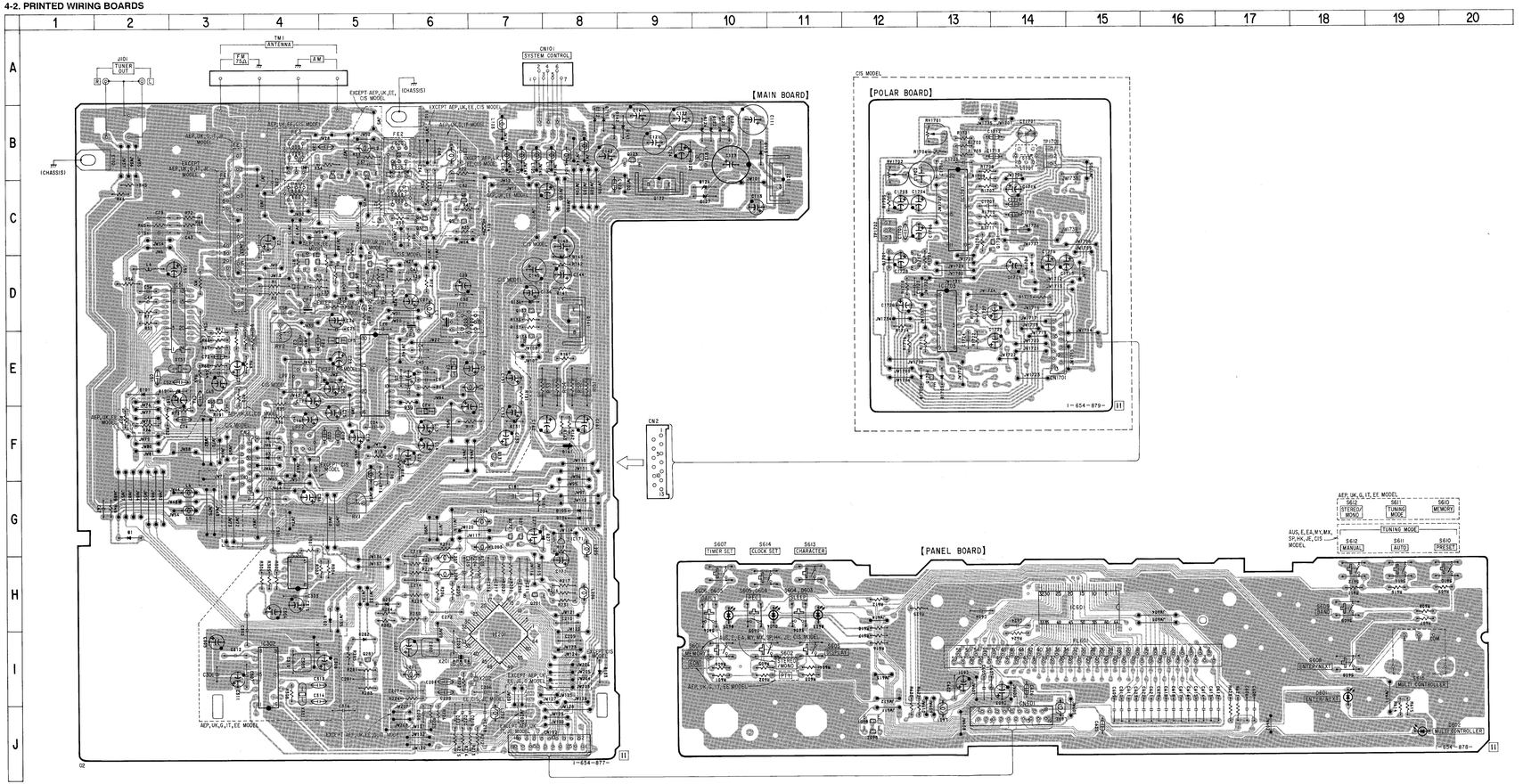
● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D1	G-1	IC171	G-8
D2	F-4	IC201	I-7
D3	F-4	IC301	H-4
D101	E-2	IC302	I-4
D102	H-5	IC601	H-15
D103	I-8	IC1701	C-13
D104	G-8	IC1703	D-13
D105	G-8		
D111	B-8		
D112	B-8	Q1	D-4
		Q2	D-4
D113	B-10	Q3	C-6
D121	B-10	Q4	C-6
D122	B-10	Q5	C-6
D123	B-10		
D124	B-10	Q6	B-5
		Q7	B-5
D125	B-9	Q8	C-6
D126	C-10	Q9	D-5
D127	C-10	Q10	D-5
D131	F-7		
D138	D-7	Q55	E-3
		Q121	B-10
D141	B-9	Q122	C-9
D142	B-8	Q123	B-9
D143	D-8	Q131	F-7
D161	F-8		
D191	E-3	Q138	E-7
		Q137	D-7
D271	G-7	Q141	D-8
D281	H-5	Q201	H-7
D282	I-5	Q271	G-7
D601	I-18		
D602	J-19	Q272	G-7
		Q281	I-5
D603	H-11	Q601	J-12
D604	H-11	Q602	J-12
D605	H-10	Q1701	C-14
D1701	D-12		
D1703	E-13	Q1702	D-12
		Q1704	E-13
D1704	D-14		
D1705	E-13		
IC1	E-5		
IC51	D-3		
IC111	C-11		

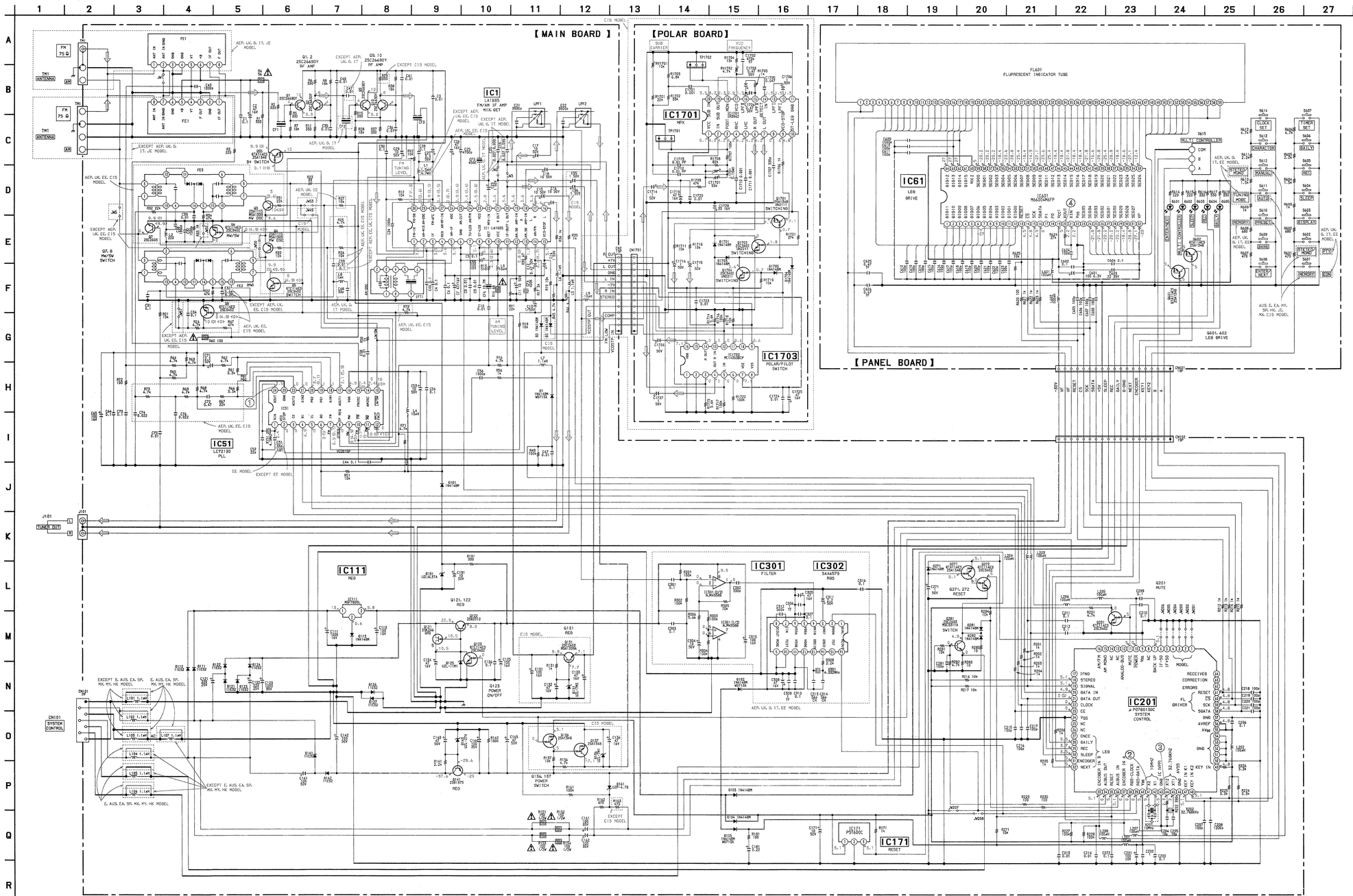
Note:

- ○— : parts extracted from the component side.
- ▒▒▒ : Pattern on the side which is seen.
- Abbreviation
  - EE : East European
  - JE : Tourist
  - IT : Italian
  - G : German
  - AUS : Australian
  - EA : Saudi Arabia
  - MX : Mexican
  - MY : Malaysia
  - SP : Singapore
  - HK : Hong Kong

4-2. PRINTED WIRING BOARDS

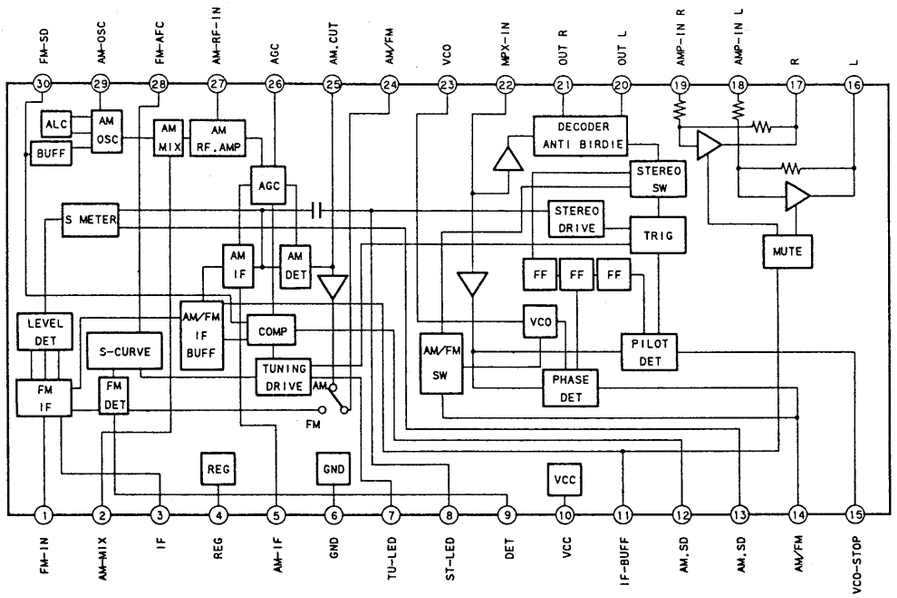


4-3. SCHEMATIC DIAGRAM

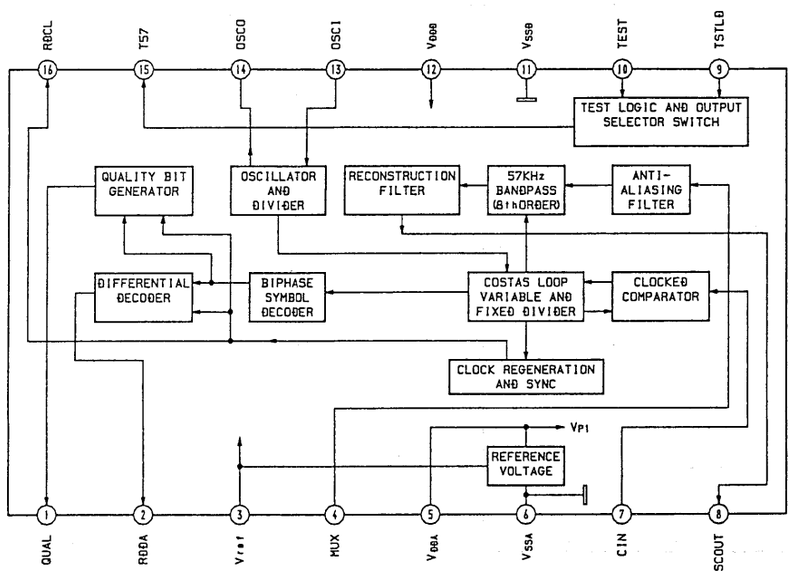


• IC BLOCK DIAGRAMS

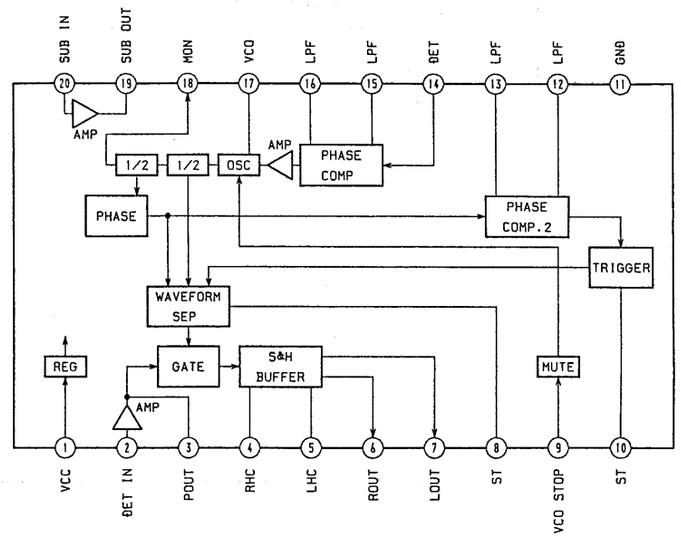
IC1 LA1835



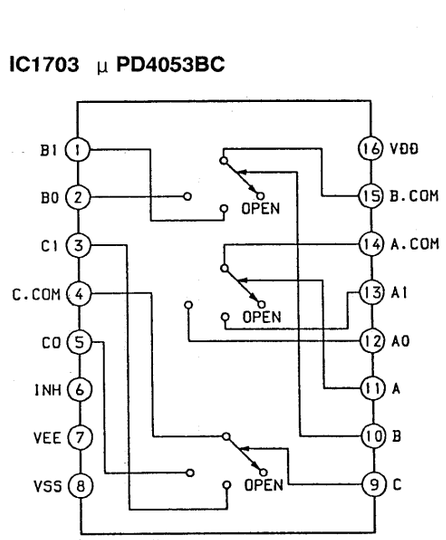
IC302 SAA6579



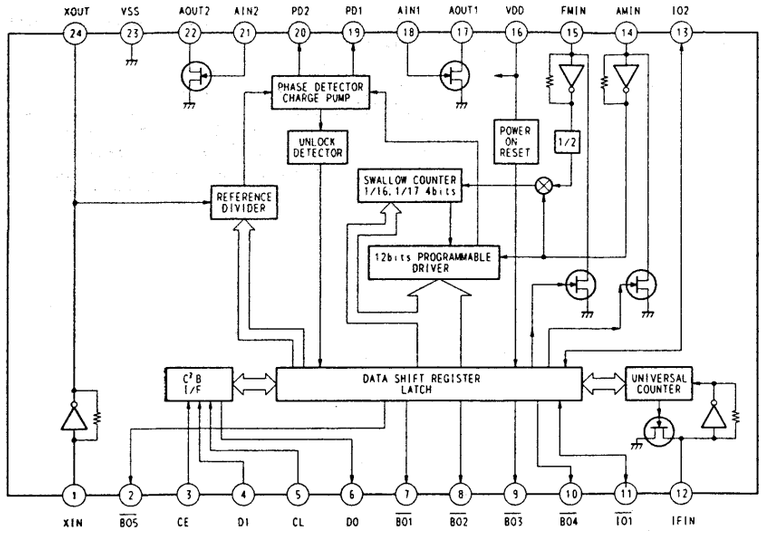
IC1701 IR3R42



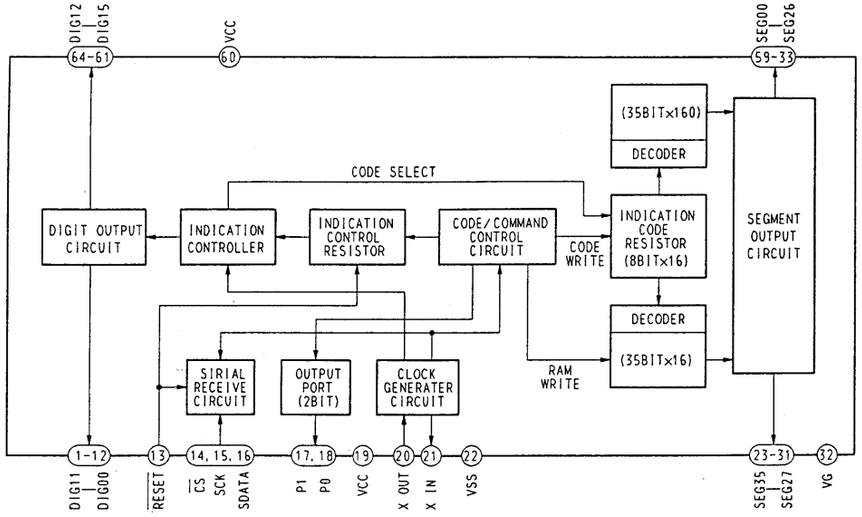
IC1703 μ PD4053BC



IC51 LC72130



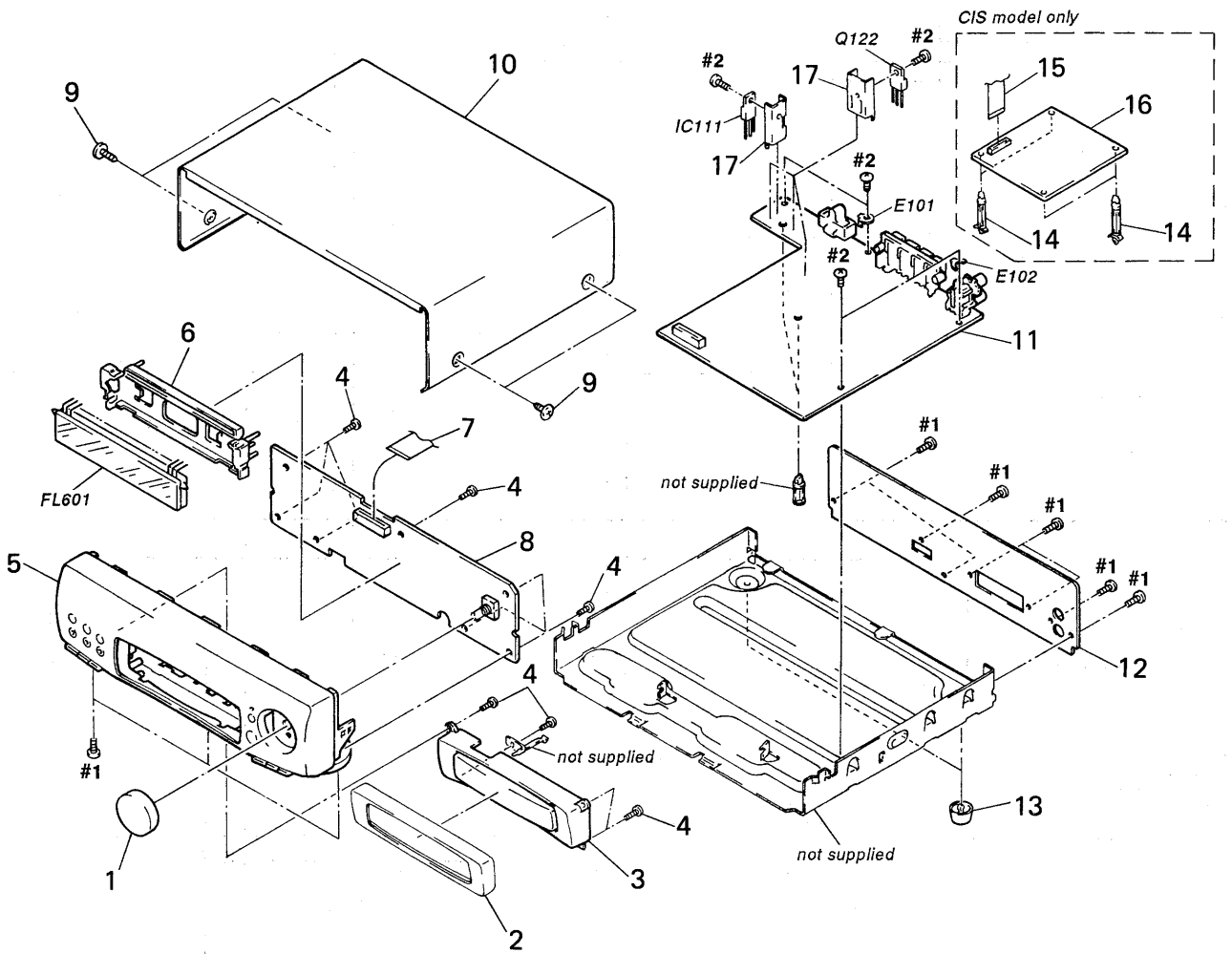
IC601 M66004M6FP



SECTION 5
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  - EE : East European
  - JE : Tourist
  - IT : Italian
  - G : German
  - AUS : Australian
  - EA : Saudi Arabia
  - MX : Mexican
  - MY : Malaysia
  - SP : Singapore
  - HK : Hong Kong



Ref. No.	Part No.	Description	Remark
1	4-970-782-11	KNOB (JOG)	
2	4-970-932-01	PLATE (ST/CD), ORNAMENTAL	
3	4-970-785-01	WINDOW (FL)	
4	4-951-620-01	SCREW (2.6×8), +BVTP	
5	X-4945-419-1	PANEL ASSY, FRONT (AEP, UK, G, IT, EE)	
5	X-4945-429-1	PANEL ASSY, FRONT (E, AUS, EA, MX, MY, SP, HK, JE, CIS)	
* 6	4-970-787-11	HOLDER (FL)	
7	1-765-242-31	WIRE (FLAT TYPE) (19 CORE)	
* 8	A-4377-038-A	PANEL BOARD, COMPLETE	
9	3-363-099-01	SCREW (CASE 3 TP2)	
10	4-970-927-21	CASE	
* 11	A-4377-031-A	MAIN BOARD, COMPLETE (G)	
* 11	A-4377-032-A	MAIN BOARD, COMPLETE (IT)	
* 11	A-4377-033-A	MAIN BOARD, COMPLETE (AEP, UK)	
* 11	A-4377-034-A	MAIN BOARD, COMPLETE (EE)	
* 11	A-4377-035-A	MAIN BOARD, COMPLETE (CIS)	
* 11	A-4377-036-A	MAIN BOARD, COMPLETE (E, AUS, EA, MX, MY, SP, HK)	
* 11	A-4377-844-A	MAIN BOARD, COMPLETE (JE)	
* 12	4-970-786-11	PANEL, BACK (AEP, UK, G, IT, EE, CIS)	
* 12	4-970-786-21	PANEL, BACK (E, AUS, EA, MX, MY, SP, HK, JE)	
13	4-965-822-01	FOOT	
* 14	4-924-098-91	HOLDER, PC BOARD (CIS)	
15	1-751-688-11	WIRE (FLAT TYPE) (13 CORE) (CIS)	
16	A-4369-349-A	POLAR BOARD, COMPLETE (CIS)	
* 17	3-309-144-21	HEAT SINK	
E101	1-537-770-11	TERMINAL BOARD, GROUND	
E102	1-537-770-11	TERMINAL BOARD, GROUND	
FL601	1-517-368-11	INDICATOR TUBE, FLUORESCENT	

SECTION 6
ELECTRICAL PARTS LIST

MAIN

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μA.... , uPA.... : μPA....
  uPB.... : μPB.... , uPC.... : μPC....
  uPD.... : μPD....
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

- Abbreviation

EE	: East European	EA	: Saudi Arabia
JE	: Tourist	MX	: Mexican
IT	: Italian	MY	: Malaysia
G	: German	SP	: Singapore
AUS	: Australian	HK	: Hong Kong

Ref. No.	Part No.	Description			Remark
*	A-4377-031-A	MAIN BOARD, COMPLETE (G)			
*	A-4377-032-A	MAIN BOARD, COMPLETE (IT)			
*	A-4377-033-A	MAIN BOARD, COMPLETE (AEP, UK)			
*	A-4377-034-A	MAIN BOARD, COMPLETE (EE)			
*	A-4377-035-A	MAIN BOARD, COMPLETE (CIS)			
*	A-4377-036-A	MAIN BOARD, COMPLETE			(E, AUS, EA, MX, MY, SP, HK)
*	A-4377-844-A	MAIN BOARD, COMPLETE (JE)			
		**********			
		< CAPACITOR >			
C1	1-164-159-11	CERAMIC	0.1uF		50V
C2	1-126-967-11	ELECT	47uF	20%	16V
C3	1-162-306-11	CERAMIC	0.01uF	30%	16V
C4	1-164-159-11	CERAMIC	0.1uF		50V
C5	1-164-159-11	CERAMIC	0.1uF		50V
C6	1-164-159-11	CERAMIC	0.1uF		50V
C7	1-126-967-11	ELECT	47uF	20%	16V
C8	1-162-306-11	CERAMIC	0.01uF	30%	16V
C9	1-162-306-11	CERAMIC	0.01uF	30%	16V
C10	1-162-306-11	CERAMIC	0.01uF	30%	16V
C11	1-126-964-11	ELECT	10uF	20%	50V
C12	1-124-902-00	ELECT	0.47uF	20%	50V
C13	1-124-903-11	ELECT	1uF	20%	50V
C14	1-124-903-11	ELECT	1uF	20%	50V
C15	1-126-964-11	ELECT	10uF	20%	50V
C16	1-126-964-11	ELECT	10uF	20%	50V
C17	1-126-964-11	ELECT	10uF	20%	50V
C18	1-126-964-11	ELECT	10uF	20%	50V
C19	1-136-160-00	FILM	0.039uF	5%	50V (AEP, UK, G, IT)
C19	1-136-158-00	FILM	0.027uF	5%	50V (E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)
C20	1-136-160-00	FILM	0.039uF	5%	50V (AEP, UK, G, IT)
C20	1-136-158-00	FILM	0.027uF	5%	50V (E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)
C21	1-137-436-11	FILM	0.0039uF	5%	50V
C22	1-137-436-11	FILM	0.0039uF	5%	50V
C23	1-124-903-11	ELECT	1uF	20%	50V
C24	1-162-294-31	CERAMIC	0.001uF	10%	50V
C25	1-162-600-11	CERAMIC	0.0047uF	30%	16V
C26	1-126-967-11	ELECT	47uF	20%	16V
C27	1-126-111-11	ELECT	3.3uF	20%	50V
C28	1-164-159-11	CERAMIC	0.1uF		50V
C29	1-126-964-11	ELECT	10uF	20%	50V
C30	1-164-159-11	CERAMIC	0.1uF		50V
C31	1-164-159-11	CERAMIC	0.1uF		50V
C32	1-162-196-31	CERAMIC	5.6PF	10%	50V (AEP, UK, EE, CIS)
C32	1-162-198-31	CERAMIC	8.2PF	10%	50V (G, IT, E, AUS, EA, MX, MY, SP, HK, JE)
C33	1-162-306-11	CERAMIC	0.01uF	30%	16V (AEP, UK, EE, CIS)
C33	1-164-159-11	CERAMIC	0.1uF		50V (G, IT, E, AUS, EA, MX, MY, SP, HK, JE)
C34	1-164-159-11	CERAMIC	0.1uF		50V (AEP, UK, EE, CIS)
C35	1-162-306-11	CERAMIC	0.01uF	30%	16V
C36	1-162-306-11	CERAMIC	0.01uF	30%	16V
C37	1-162-301-11	CERAMIC	0.0015uF	30%	16V (AEP, UK, EE, CIS)
C38	1-102-120-00	CERAMIC	0.0018uF	10%	50V (AEP, UK, EE, CIS)
C39	1-162-306-11	CERAMIC	0.01uF	30%	16V (AEP, UK, EE, CIS)
C40	1-162-306-11	CERAMIC	0.01uF	30%	16V
C41	1-162-306-11	CERAMIC	0.01uF	30%	16V
C43	1-162-294-31	CERAMIC	0.001uF	10%	50V
C44	1-164-159-11	CERAMIC	0.1uF		50V
C45	1-164-159-11	CERAMIC	0.1uF		50V

MAIN

Ref. No.	Part No.	Description				Remark
C47	1-164-095-11	CERAMIC	0.01uF	10%	16V	(EXCEPT AEP, UK, G, IT)
C48	1-162-211-31	CERAMIC	33PF	5%	50V	(AEP, UK, G, IT)
C51	1-164-031-11	CERAMIC	33PF	5%	50V	(EXCEPT EE)
C51	1-164-019-11	CERAMIC	10PF	0.5PF	50V	(EE)
C52	1-164-027-11	CERAMIC	22PF	5%	50V	
C53	1-126-964-11	ELECT	10uF	20%	50V	
C54	1-164-159-11	CERAMIC	0.1uF		50V	
C55	1-126-933-11	ELECT	100uF	20%	10V	
C56	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C58	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C64	1-164-159-11	CERAMIC	0.1uF		50V	
C65	1-126-933-11	ELECT	100uF	20%	16V	
C67	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C71	1-124-925-11	ELECT	2.2uF	20%	100V	
C72	1-136-173-00	FILM	0.47uF	5%	50V	(AEP, UK, EE, CIS)
C73	1-164-159-11	CERAMIC	0.1uF		50V	
C74	1-164-097-11	CERAMIC	0.022uF		50V	(AEP, UK, EE, CIS)
C75	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C76	1-164-097-11	CERAMIC	0.022uF		50V	(AEP, UK, EE, CIS)
C95	1-124-903-11	ELECT	1uF	20%	50V	(CIS)
C96	1-124-903-11	ELECT	1uF	20%	50V	(CIS)
C111	1-126-952-11	ELECT	1000uF	20%	16V	
C113	1-126-933-11	ELECT	100uF	20%	10V	
C121	1-104-666-11	ELECT	220uF	20%	25V	
C122	1-104-666-11	ELECT	220uF	20%	25V	
C123	1-126-952-11	ELECT	1000uF	20%	35V	
C124	1-126-967-11	ELECT	47uF	20%	16V	
C125	1-126-933-11	ELECT	100uF	20%	16V	
C126	1-136-165-00	FILM	0.1uF	5%	50V	
C131	1-126-933-11	ELECT	100uF	20%	16V	(CIS)
C132	1-126-967-11	ELECT	47uF	20%	16V	(CIS)
C133	1-126-967-11	ELECT	47uF	20%	16V	(CIS)
C136	1-126-803-11	ELECT	47uF	20%	10V	(CIS)
C141	1-124-122-11	ELECT	100uF	20%	50V	
C142	1-124-122-11	ELECT	100uF	20%	50V	
C143	1-126-967-11	ELECT	47uF	20%	50V	
C144	1-126-948-11	ELECT	100uF	20%	35V	
C145	1-126-967-11	ELECT	47uF	20%	50V	
C161	1-126-948-11	ELECT	100uF	20%	35V	
C162	1-126-948-11	ELECT	100uF	20%	35V	
C171	1-126-964-11	ELECT	10uF	20%	50V	
C181	1-125-705-11	CAP, DOUBLE LAYERS			0.22F	
C191	1-126-964-11	ELECT	10uF	20%	50V	
C201	1-126-933-11	ELECT	100uF	20%	10V	

Ref. No.	Part No.	Description				Remark
C202	1-136-177-00	FILM	1uF	5%	50V	
C203	1-164-159-11	CERAMIC	0.1uF		50V	
C204	1-164-025-51	CERAMIC	18PF	5%	50V	
C205	1-164-025-51	CERAMIC	18PF	5%	50V	
C206	1-164-159-11	CERAMIC	0.1uF		50V	
C207	1-162-282-31	CERAMIC	100PF	10%	50V	
C208	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C209	1-164-159-11	CERAMIC	0.1uF		50V	
C210	1-164-159-11	CERAMIC	0.1uF		50V	
C211	1-164-159-11	CERAMIC	0.1uF		50V	
C212	1-164-159-11	CERAMIC	0.1uF		50V	
C213	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C214	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C215	1-162-282-31	CERAMIC	100PF	10%	50V	
C216	1-162-282-31	CERAMIC	100PF	10%	50V	
C217	1-162-282-31	CERAMIC	100PF	10%	50V	
C218	1-162-282-31	CERAMIC	100PF	10%	50V	
C219	1-162-282-31	CERAMIC	100PF	10%	50V	
C220	1-162-282-31	CERAMIC	100PF	10%	50V	
C221	1-162-282-31	CERAMIC	100PF	10%	50V	
C271	1-124-903-11	ELECT	1uF	20%	50V	
C272	1-164-159-11	CERAMIC	0.1uF		50V	
C281	1-162-282-31	CERAMIC	100PF	10%	50V	
C301	1-164-159-11	CERAMIC	0.1uF		50V	(AEP, UK, G, IT, EE)
C302	1-162-288-31	CERAMIC	330PF	10%	50V	(AEP, UK, G, IT, EE)
C303	1-164-159-11	CERAMIC	0.1uF		50V	(AEP, UK, G, IT, EE)
C304	1-126-964-11	ELECT	10uF	20%	50V	(AEP, UK, G, IT, EE)
C305	1-126-967-11	ELECT	47uF	20%	16V	(AEP, UK, G, IT, EE)
C306	1-136-177-00	FILM	1uF	5%	50V	(AEP, UK, G, IT, EE)
C307	1-164-159-11	CERAMIC	0.1uF		50V	(AEP, UK, G, IT, EE)
C308	1-126-967-11	ELECT	47uF	20%	16V	(AEP, UK, G, IT, EE)
C309	1-136-177-00	FILM	1uF	5%	50V	(AEP, UK, G, IT, EE)
C310	1-164-159-11	CERAMIC	0.1uF		50V	(AEP, UK, G, IT, EE)
C311	1-124-925-11	ELECT	2.2uF	20%	100V	(AEP, UK, G, IT, EE)
C312	1-162-291-31	CERAMIC	560PF	10%	50V	(AEP, UK, G, IT, EE)
C313	1-101-884-00	CERAMIC	56PF	5%	50V	(AEP, UK, G, IT, EE)
C314	1-101-884-00	CERAMIC	56PF	5%	50V	(AEP, UK, G, IT, EE)

MAIN

Ref. No.	Part No.	Description			Remark
C315	1-126-933-11	ELECT	100uF	20%	16V (AEP, UK, G, IT, EE)
C316	1-164-159-11	CERAMIC	0.1uF		50V (AEP, UK, G, IT, EE)
C621	1-162-282-31	CERAMIC	100PF	10%	50V
		< FILTER >			
CF1	1-579-374-71	FILTER, CERAMIC (AEP, UK, G, IT)			
CF1	1-567-389-11	FILTER, CERAMIC (E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)			
CF2	1-760-393-11	FILTER, CERAMIC (AEP, UK, G, IT)			
CF3	1-760-393-11	FILTER, CERAMIC (AEP, UK, G, IT)			
CF3	1-567-389-11	FILTER, CERAMIC (E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)			
CF4	1-527-981-00	FILTER, CERAMIC			
CF5	1-577-075-11	OSCILLATOR, CERAMIC			
CF6	1-760-220-21	FILTER, CERAMIC			
		< CONNECTOR >			
CN101	1-770-158-41	SOCKET, CONNECTOR 7P			
CN102	1-568-802-11	SOCKET, CONNECTOR 19P			
		< DIODE >			
D1	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D1	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D2	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D2	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D3	8-719-987-63	DIODE	1N4148M (CIS)		
D101	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D101	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D102	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D102	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D103	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D103	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D104	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D104	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D105	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D105	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D111	8-719-200-82	DIODE	11ES2		
D112	8-719-200-82	DIODE	11ES2		
D113	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS		
D113	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D121	8-719-200-82	DIODE	11ES2		
D122	8-719-200-82	DIODE	11ES2		
D123	8-719-200-82	DIODE	11ES2		
D124	8-719-200-82	DIODE	11ES2		
D125	8-719-001-43	DIODE	UZL-11M1-TA		
D126	8-719-200-82	DIODE	11ES2		
D127	8-719-200-82	DIODE	11ES2		
D131	8-719-933-48	DIODE	HZS7B3L (CIS)		
D136	8-719-000-85	DIODE	UZL-7M1-TA (CIS)		
D141	8-719-200-82	DIODE	11ES2		
D142	8-719-200-82	DIODE	11ES2		
D143	8-719-002-48	DIODE	UZL-27H		
D161	8-719-014-48	DIODE	UZP-4.7B		
D191	8-719-000-54	DIODE	UZL-6L3		
D271	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D271	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D281	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D281	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
D282	8-719-987-63	DIODE	1N4148M (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)		
D282	8-719-815-85	DIODE	1S1585 (AEP:Made in France, UK, IT, G)		
		< FRONT END >			
FE1	1-693-253-21	FRONT END (4 GANG) (AEP, UK, G, IT)			
FE1	1-693-090-51	FRONT END (FM) (2 GANG) (E, AUS, EA, MX, MY, SP, HK)			
FE1	1-693-244-21	FRONT END (3 GANG) (EE, CIS)			
FE1	1-693-251-11	FRONT END (JE)			
FE2	1-239-261-12	ENCAPSULATED COMPONENT (AEP, UK, EE, CIS)			
FE2	1-239-634-11	ENCAPSULATED COMPONENT, AM. RF (G, IT, E, AUS, EA, MX, MY, SP, HK, JE)			
FE3	1-236-463-11	ENCAPSULATED COMPONENT (AEP, UK, EE, CIS)			
		< IC >			
IC1	8-759-176-03	IC	LA1835		
IC51	8-759-288-54	IC	LC72130		
IC111	8-759-231-53	IC	TA7805S		
IC171	8-759-165-80	IC	PST600C-T		
IC201	8-759-338-81	IC	uPD78013GC-652-AB8		

Ref. No.	Part No.	Description	Remark
IC301	8-759-634-51	IC M5218AP (AEP, UK, G, IT, EE)	
IC302	8-759-169-99	IC SAA6579 (AEP, UK, G, IT, EE)	
IC601	8-759-261-63	IC M66004M6FP	
		< IFT >	
IFT1	1-409-636-11	TRANSFORMER, IF (CERAMIC FILTER)	
		< JACK >	
J101	1-770-272-11	JACK, PIN 2P (TUNER OUT)	
		< COIL >	
L1	1-407-500-00	INDUCTOR 4.7mH (AEP, UK, EE, CIS)	
L1	1-410-688-31	INDUCTOR 1.5mH (G, IT, E, AUS, EA, MX, MY, SP, HK, JE)	
L2	1-408-425-00	INDUCTOR 220uH (AEP, UK, EE, CIS)	
L3	1-410-470-11	INDUCTOR 10uH	
L4	1-410-509-11	INDUCTOR 10uH	
L5	1-410-397-21	FERRITE BEAD INDUCTOR	
L6	1-410-397-21	FERRITE BEAD INDUCTOR	
L7	1-410-397-21	FERRITE BEAD INDUCTOR	
L8	1-408-397-00	INDUCTOR 1uH (AEP, UK, G, IT)	
L9	1-410-509-11	INDUCTOR 10uH (CIS)	
L101-107	1-410-397-21	FERRITE BEAD INDUCTOR (AEP, UK, G, IT, EE, CIS, JE)	
L201-208	1-408-421-00	INDUCTOR 100uH	
		< FILTER >	
LPF1	1-239-597-11	FILTER, LOW PASS	
LPF2	1-239-597-11	FILTER, LOW PASS	
		< TRANSISTOR >	
Q1	8-729-230-99	TRANSISTOR 2SC2669-OY	
Q2	8-729-230-99	TRANSISTOR 2SC2669-OY	
Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE (AEP, UK, EE, CIS)	
Q4	8-729-119-76	TRANSISTOR 2SA1175-HFE (AEP, UK, EE, CIS)	
Q5	8-729-900-80	TRANSISTOR DTC114ES (AEP, UK, EE, CIS)	
Q6	8-729-900-80	TRANSISTOR DTC114ES (AEP, UK, EE, CIS)	
Q7	8-729-620-05	TRANSISTOR 2SC2603-EF (AEP, UK, EE, CIS)	
Q8	8-729-900-80	TRANSISTOR DTC114ES (AEP, UK, EE, CIS)	
Q9	8-729-230-99	TRANSISTOR 2SC2669-OY	
Q10	8-729-230-99	TRANSISTOR 2SC2669-OY	
Q55	8-729-422-57	TRANSISTOR UN4111 (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)	
Q55	8-729-900-61	TRANSISTOR DTA114ES (AEP:Made in France, G, IT)	
Q121	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q122	8-729-209-15	TRANSISTOR 2SD2012	

Ref. No.	Part No.	Description	Remark
Q123	8-729-900-80	TRANSISTOR DTC114ES	
Q131	8-729-620-05	TRANSISTOR 2SC2603-EF (CIS)	
Q136	8-729-900-61	TRANSISTOR DTA114ES (CIS)	
Q137	8-729-900-61	TRANSISTOR DTA114ES (CIS)	
Q141	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q201	8-729-900-80	TRANSISTOR DTC114ES	
Q271	8-729-422-57	TRANSISTOR UN4111 (AEP:Made in Japan, AUS, EA, MX, MY, SP, HK, E, EE, JE, CIS)	
Q271	8-729-900-61	TRANSISTOR DTA114ES (AEP:Made in France, UK, G, IT)	
Q272	8-729-900-80	TRANSISTOR DTC114ES	
Q281	8-729-620-05	TRANSISTOR 2SC2603-EF	
		< RESISTOR >	
R1	1-249-411-11	CARBON 330 5% 1/4W	
R2	1-249-411-11	CARBON 330 5% 1/4W	
R3	1-249-409-11	CARBON 220 5% 1/4W	
⚠R4	1-249-402-11	CARBON 56 5% 1/4W	F
R5	1-249-411-11	CARBON 330 5% 1/4W	
R6	1-249-411-11	CARBON 330 5% 1/4W	
R7	1-249-432-11	CARBON 18K 5% 1/4W	
R8	1-249-432-11	CARBON 18K 5% 1/4W	
R11	1-249-411-11	CARBON 330 5% 1/4W	
R12	1-249-429-11	CARBON 10K 5% 1/4W	
R13	1-249-442-11	CARBON 510 5% 1/4W	
⚠R14	1-249-403-11	CARBON 68 5% 1/4W	F
R15	1-249-411-11	CARBON 330 5% 1/4W	
R16	1-249-425-11	CARBON 4.7K 5% 1/4W	
R17	1-247-842-11	CARBON 3K 5% 1/4W	
R18	1-249-429-11	CARBON 10K 5% 1/4W	
R19	1-249-429-11	CARBON 10K 5% 1/4W	
R21	1-249-429-11	CARBON 10K 5% 1/4W	
R22	1-249-437-11	CARBON 47K 5% 1/4W	
R23	1-249-399-11	CARBON 33 5% 1/4W	
R24	1-249-425-11	CARBON 4.7K 5% 1/4W (AEP, UK, EE, CIS)	
R25	1-249-425-11	CARBON 4.7K 5% 1/4W (AEP, UK, EE, CIS)	
R26	1-249-429-11	CARBON 10K 5% 1/4W (AEP, UK, EE, CIS)	
R27	1-249-429-11	CARBON 10K 5% 1/4W (AEP, UK, EE)	
R28	1-249-432-11	CARBON 18K 5% 1/4W	
R29	1-249-411-11	CARBON 330 5% 1/4W (AEP, UK, G, IT, E, AUS, EA, MX, MY, SP, HK, EE, JE)	
R30	1-249-421-11	CARBON 2.2K 5% 1/4W (AEP, UK, EE, CIS)	
R31	1-247-863-91	CARBON 22K 5% 1/4W (AEP, UK, EE, CIS)	
R32	1-247-863-91	CARBON 22K 5% 1/4W (AEP, UK, EE, CIS)	
R33	1-247-903-00	CARBON 1M 5% 1/4W (AEP, UK, EE, CIS)	
R34	1-249-437-11	CARBON 47K 5% 1/4W (AEP, UK, EE, CIS)	
R35	1-249-417-11	CARBON 1K 5% 1/4W	
R36	1-249-417-11	CARBON 1K 5% 1/4W	
R37	1-249-411-11	CARBON 330 5% 1/4W	
R38	1-249-432-11	CARBON 18K 5% 1/4W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN PANEL

Ref. No.	Part No.	Description				Remark
R39	1-249-401-11	CARBON	47	5%	1/4W	
R45	1-249-425-11	CARBON	4.7K	5%	1/4W	
R46	1-249-425-11	CARBON	4.7K	5%	1/4W	
R47	1-249-437-11	CARBON	47K	5%	1/4W	(AEP, UK, EE, CIS)
R49	1-249-441-11	CARBON	100K	5%	1/4W	
R51	1-249-429-11	CARBON	10K	5%	1/4W	
R56	1-249-417-11	CARBON	1K	5%	1/4W	
R58	1-249-417-11	CARBON	1K	5%	1/4W	
⚠R60	1-249-405-11	CARBON	100	5%	1/4W	F
R61	1-249-423-11	CARBON	3.3K	5%	1/4W	
R62	1-249-425-11	CARBON	4.7K	5%	1/4W	
R63	1-249-425-11	CARBON	4.7K	5%	1/4W	
R64	1-249-425-11	CARBON	4.7K	5%	1/4W	
R65	1-249-425-11	CARBON	4.7K	5%	1/4W	
R66	1-249-423-11	CARBON	3.3K	5%	1/4W	(AEP, UK, EE, CIS)
R67	1-247-863-91	CARBON	22K	5%	1/4W	(AEP, UK, EE, CIS)
R68	1-249-425-11	CARBON	4.7K	5%	1/4W	(AEP, UK, EE, CIS)
R69	1-249-425-11	CARBON	4.7K	5%	1/4W	(AEP, UK, EE, CIS)
R70	1-249-425-11	CARBON	4.7K	5%	1/4W	(AEP, UK, EE, CIS)
R71	1-249-425-11	CARBON	4.7K	5%	1/4W	
R72	1-247-807-31	CARBON	100	5%	1/4W	
R73	1-249-425-11	CARBON	4.7K	5%	1/4W	(AEP, UK, EE, CIS)
R131	1-249-413-11	CARBON	470	5%	1/4W	(CIS)
R136	1-249-425-11	CARBON	4.7K	5%	1/4W	(CIS)
R137	1-249-429-11	CARBON	10K	5%	1/4W	(CIS)
R141	1-249-421-11	CARBON	2.2K	5%	1/4W	
R142	1-249-441-11	CARBON	100K	5%	1/4W	
⚠R151	1-247-741-11	CARBON	150	5%	1/2W	F
⚠R152	1-247-741-11	CARBON	150	5%	1/2W	F
⚠R153	1-247-741-11	CARBON	150	5%	1/2W	F
⚠R154	1-247-741-11	CARBON	150	5%	1/2W	F
R161	1-249-441-11	CARBON	100K	5%	1/4W	
R162	1-249-413-11	CARBON	470	5%	1/4W	
R163	1-249-413-11	CARBON	470	5%	1/4W	(AEP, UK, G, IT, E, AUS, EA, MX, MY, SP, HK, EE, JE)
R171	1-249-417-11	CARBON	1K	5%	1/4W	
R181	1-247-807-31	CARBON	100	5%	1/4W	
R191	1-249-411-11	CARBON	330	5%	1/4W	
R201	1-249-417-11	CARBON	1K	5%	1/4W	
R202	1-249-417-11	CARBON	1K	5%	1/4W	
R203	1-249-417-11	CARBON	1K	5%	1/4W	
R204	1-249-417-11	CARBON	1K	5%	1/4W	
R205	1-249-417-11	CARBON	1K	5%	1/4W	
R206	1-249-417-11	CARBON	1K	5%	1/4W	
R212	1-249-417-11	CARBON	1K	5%	1/4W	
R213	1-249-417-11	CARBON	1K	5%	1/4W	
R214	1-249-417-11	CARBON	1K	5%	1/4W	
R215	1-249-417-11	CARBON	1K	5%	1/4W	
R216	1-249-429-11	CARBON	10K	5%	1/4W	
R217	1-249-429-11	CARBON	10K	5%	1/4W	
R222	1-247-893-11	CARBON	390K	5%	1/4W	
R224	1-249-423-11	CARBON	3.3K	5%	1/4W	
R225	1-249-423-11	CARBON	3.3K	5%	1/4W	
R226	1-249-423-11	CARBON	3.3K	5%	1/4W	
R227	1-249-441-11	CARBON	100K	5%	1/4W	
R228	1-249-441-11	CARBON	100K	5%	1/4W	
R229	1-247-807-31	CARBON	100	5%	1/4W	
R230	1-247-807-31	CARBON	100	5%	1/4W	
R231	1-249-425-11	CARBON	4.7K	5%	1/4W	
R271	1-249-429-11	CARBON	10K	5%	1/4W	
R281	1-249-429-11	CARBON	10K	5%	1/4W	
R282	1-249-425-11	CARBON	4.7K	5%	1/4W	
R283	1-249-393-11	CARBON	10	5%	1/4W	
R284	1-249-429-11	CARBON	10K	5%	1/4W	
R285	1-249-393-11	CARBON	10	5%	1/4W	
R301	1-249-441-11	CARBON	100K	5%	1/4W	(AEP, UK, G, IT, EE)
R302	1-249-441-11	CARBON	100K	5%	1/4W	(AEP, UK, G, IT, EE)
R303	1-249-441-11	CARBON	100K	5%	1/4W	(AEP, UK, G, IT, EE)
R304	1-249-441-11	CARBON	100K	5%	1/4W	(AEP, UK, G, IT, EE)
R305	1-249-429-11	CARBON	10K	5%	1/4W	(AEP, UK, G, IT, EE)
R306	1-249-426-11	CARBON	5.6K	5%	1/4W	(AEP, UK, G, IT, EE)
R308	1-249-421-11	CARBON	2.2K	5%	1/4W	(AEP, UK, G, IT, EE)

< VARIABLE RESISTOR >

RV1	1-238-601-11	RES, ADJ, CARBON	22K (FM TUNING LEVEL)
RV2	1-238-600-11	RES, ADJ, CARBON	10K (AM TUNING LEVEL)

< TERMINAL >

TM1	1-537-488-11	TERMINAL BOARD (ANT) (ANTENNA)	(AEP, UK, G, IT, EE, CIS)
TM1	1-537-238-21	TERMINAL BOARD (ANTENNA)	(E, AUS, EA, MX, MY, SP, HK, JE)

< VIBRATOR >

X201	1-579-175-11	VIBRATOR, CERAMIC	(10MHz)
X202	1-567-098-41	VIBRATOR, CRYSTAL	(32.768kHz)
X301	1-579-900-21	VIBRATOR, CRYSTAL	(4.332MHz) (AEP, UK, G, IT, EE)
XT51	1-760-549-11	VIBRATOR, CRYSTAL	(4.5MHz)

****

*	A-4377-038-A	PANEL BOARD, COMPLETE			

****

< CAPACITOR >

C601	1-124-584-00	ELECT	100uF	20%	10V
C602	1-164-159-11	CERAMIC	0.1uF		50V
C603	1-124-248-00	ELECT	22uF	20%	35V
C604	1-164-159-11	CERAMIC	0.1uF		50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C605	1-162-282-31	CERAMIC	100PF	10%	50V
C606	1-162-282-31	CERAMIC	100PF	10%	50V
C607	1-162-282-31	CERAMIC	100PF	10%	50V
C608	1-162-282-31	CERAMIC	100PF	10%	50V
C609	1-162-294-31	CERAMIC	0.001uF	10%	50V
C610	1-162-282-31	CERAMIC	100PF	10%	50V
C611	1-162-282-31	CERAMIC	100PF	10%	50V
C612	1-162-282-31	CERAMIC	100PF	10%	50V
C613	1-162-282-31	CERAMIC	100PF	10%	50V
C614	1-162-282-31	CERAMIC	100PF	10%	50V
C615	1-162-282-31	CERAMIC	100PF	10%	50V
C616	1-162-282-31	CERAMIC	100PF	10%	50V
C617	1-162-282-31	CERAMIC	100PF	10%	50V
C618	1-162-282-31	CERAMIC	100PF	10%	50V
C619	1-162-282-31	CERAMIC	100PF	10%	50V
C620	1-162-282-31	CERAMIC	100PF	10%	50V
C622	1-162-282-31	CERAMIC	100PF	10%	50V
C623	1-162-282-31	CERAMIC	100PF	10%	50V
C624	1-162-282-31	CERAMIC	100PF	10%	50V
C625	1-136-173-00	FILM	0.47uF	5%	50V
C626	1-136-173-00	FILM	0.47uF	5%	50V
		< CONNECTOR >			
* CN601	1-568-862-11	SOCKET, CONNECTOR 19P			
		< DIODE >			
D601	8-719-812-44	LED	TLO124 (ENTER/NEXT)		
D602	8-719-812-44	LED	TLO124 (MULTI CONTROLLER)		
D603	8-719-032-87	LED	SEL5420E-TP15 (SLEEP)		
D604	8-719-812-44	LED	TLO124 (REC)		
D605	8-719-032-87	LED	SEL5420E-TP15 (DAILY)		
		< FILTER >			
FL601	1-517-368-11	INDICATOR TUBE, FLUORESCENT			
		< COIL >			
L601	1-408-421-00	INDUCTOR	100uH		
L602	1-408-421-00	INDUCTOR	100uH		
		< TRANSISTOR >			
Q601	8-729-422-57	TRANSISTOR UN4111 (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)			
Q601	8-729-900-61	TRANSISTOR DTA114ES (AEP:Made in France, UK, IT, G)			
Q602	8-729-422-57	TRANSISTOR UN4111 (AEP:Made in Japan, E, AUS, EA, MX, MY, SP, HK, EE, JE, CIS)			
Q602	8-729-900-61	TRANSISTOR DTA114ES (AEP:Made in France, UK, IT, G)			

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R601	1-249-413-11	CARBON	470	5%	1/4W
R602	1-249-415-11	CARBON	680	5%	1/4W
R603	1-249-417-11	CARBON	1K	5%	1/4W
R604	1-249-419-11	CARBON	1.5K	5%	1/4W
R605	1-249-421-11	CARBON	2.2K	5%	1/4W
R606	1-249-425-11	CARBON	4.7K	5%	1/4W
R607	1-249-413-11	CARBON	470	5%	1/4W
R608	1-249-415-11	CARBON	680	5%	1/4W
R609	1-249-417-11	CARBON	1K	5%	1/4W
R610	1-249-419-11	CARBON	1.5K	5%	1/4W
R611	1-249-421-11	CARBON	2.2K	5%	1/4W
R612	1-249-425-11	CARBON	4.7K	5%	1/4W
R614	1-249-409-11	CARBON	220	5%	1/4W
R615	1-249-409-11	CARBON	220	5%	1/4W
R616	1-249-411-11	CARBON	330	5%	1/4W
R617	1-249-411-11	CARBON	330	5%	1/4W
R618	1-249-411-11	CARBON	330	5%	1/4W
R620	1-247-807-31	CARBON	100	5%	1/4W
R621	1-249-417-11	CARBON	1K	5%	1/4W
R622	1-249-417-11	CARBON	1K	5%	1/4W
R623	1-249-417-11	CARBON	1K	5%	1/4W
R624	1-249-434-11	CARBON	27K	5%	1/4W
R625	1-249-429-11	CARBON	10K	5%	1/4W
		< SWITCH >			
S601	1-554-303-21	SWITCH, TACTILE (MEMOREY) (AUS, E, EA, MX, MY, SP, HK, JE, CIS)			
S601	1-554-303-21	SWITCH, TACTILE (EON) (AEP, UK, G, IT, EE)			
S602	1-554-303-21	SWITCH, TACTILE (STEREO/MONO) (AUS, E, EA, MX, MY, SP, HK, JE, CIS)			
S602	1-554-303-21	SWITCH, TACTILE (PTY) (AEP, UK, G, IT, EE)			
S603	1-554-303-21	SWITCH, TACTILE (DISPLAY)			
S604	1-554-303-21	SWITCH, TACTILE (SLEEP)			
S605	1-554-303-21	SWITCH, TACTILE (REC)			
S606	1-554-303-21	SWITCH, TACTILE (DAILY)			
S607	1-554-303-21	SWITCH, TACTILE (TIMER SET)			
S608	1-554-303-21	SWITCH, TACTILE (ENTER/NEXT)			
S609	1-554-303-21	SWITCH, TACTILE (BAND)			
S610	1-554-303-21	SWITCH, TACTILE (PRESET) (AUS, E, EA, MX, MY, SP, HK, JE, CIS)			
S610	1-554-303-21	SWITCH, TACTILE (MEMORY) (AEP, UK, G, IT, EE)			
S611	1-554-303-21	SWITCH, TACTILE (AUTO) (AUS, E, EA, MX, MY, SP, HK, JE, CIS)			
S611	1-554-303-21	SWITCH, TACTILE (TUNING MODE) (AEP, UK, G, IT, EE)			
S612	1-554-303-21	SWITCH, TACTILE (MANUAL) (AUS, E, EA, MX, MY, SP, HK, JE, CIS)			

PANEL POLAR

Ref.No.	Part No.	Description	Remark
S612	1-554-303-21	SWITCH, TACTILE (STEREO/MONO)	(AEP, UK, G, IT, EE)
S613	1-554-303-21	SWITCH, TACTILE (CHARACTOR)	
S614	1-554-303-21	SWITCH, TACTILE (CLOCK SET)	
S615	1-467-914-11	ENCODER, ROTARY (MULTI CONTROLLER)	

****

A-4369-349-A POLAR BOARD, COMPLETE (CIS)
****

< CAPACITOR >

C1701	1-162-294-31	CERAMIC	0.001uF	10%	50V (CIS)
C1702	1-130-014-00	FILM	470PF	5%	50V (CIS)
C1703	1-124-902-00	ELECT	0.47uF	20%	50V (CIS)
C1704	1-124-902-00	ELECT	0.47uF	20%	50V (CIS)
C1705	1-164-098-11	CERAMIC	0.047uF		12V (CIS)
C1706	1-124-903-11	ELECT	1uF	20%	50V (CIS)
C1707	1-162-288-31	CERAMIC	330PF	10%	50V (CIS)
C1710	1-130-471-00	MYLAR	0.001uF	5%	50V (CIS)
C1710	1-137-364-11	FILM	0.001uF	5%	50V (CIS)
C1711	1-130-471-00	MYLAR	0.001uF	5%	50V (CIS)
C1711	1-137-364-11	FILM	0.001uF	5%	50V (CIS)
C1712	1-130-736-11	FILM	0.01uF	5%	50V (CIS)
C1713	1-130-736-11	FILM	0.01uF	5%	50V (CIS)
C1714	1-124-903-11	ELECT	1uF	20%	50V (CIS)
C1715	1-124-903-11	ELECT	1uF	20%	50V (CIS)
C1716	1-124-903-11	ELECT	1uF	20%	50V (CIS)
C1719	1-124-477-11	ELECT	47uF	20%	25V (CIS)
C1720	1-162-306-11	CERAMIC	0.01uF	30%	16V (CIS)
C1723	1-162-306-11	CERAMIC	0.01uF	30%	16V (CIS)
C1724	1-162-306-11	CERAMIC	0.01uF	30%	16V (CIS)
C1725	1-124-477-11	ELECT	47uF	20%	25V (CIS)
C1726	1-124-903-11	ELECT	1uF	20%	50V (CIS)
C1727	1-124-903-11	ELECT	1uF	20%	50V (CIS)
C1728	1-104-792-51	ELECT	33uF	20%	16V (CIS)

< CONNECTOR >

* CN2	1-568-832-11	SOCKET, CONNECTOR 13P	(CIS)
* CN1701	1-568-832-11	SOCKET, CONNECTOR 13P	(CIS)

< TRIMMER >

CT1701	1-141-260-00	CAP, TRIMMER 50PF	(CIS)

< DIODE >

D1701	8-719-987-63	DIODE	1N4148M (CIS)
D1703	8-719-987-63	DIODE	1N4148M (CIS)
D1704	8-719-987-63	DIODE	1N4148M (CIS)
D1705	8-719-987-63	DIODE	1N4148M (CIS)

Ref.No.	Part No.	Description	Remark

< IC >

IC1701	8-759-063-04	IC	IR3R42 (CIS)
IC1703	8-759-140-53	IC	uPD4053BC (CIS)

< COIL >

L1701	1-409-497-11	COIL (FILTER)	(CIS)

< TRANSISTOR >

Q1701	8-729-900-61	TRANSISTOR	DTA114ES (CIS)
Q1702	8-729-900-80	TRANSISTOR	DTC114ES (CIS)
Q1704	8-729-900-80	TRANSISTOR	DTC114ES (CIS)

< RESISTOR >

R1701	1-247-863-91	CARBON	22K	5%	1/4W (CIS)
R1702	1-249-435-11	CARBON	33K	5%	1/4W (CIS)
R1703	1-249-427-11	CARBON	6.8K	5%	1/4W (CIS)
R1704	1-247-858-11	CARBON	13K	5%	1/4W (CIS)
R1705	1-249-417-11	CARBON	1K	5%	1/4W (CIS)
R1706	1-249-417-11	CARBON	1K	5%	1/4W (CIS)
R1707	1-249-441-11	CARBON	100K	5%	1/4W (CIS)
R1708	1-249-440-11	CARBON	82K	5%	1/4W (CIS)
R1709	1-249-437-11	CARBON	47K	5%	1/4W (CIS)
R1710	1-249-429-11	CARBON	10K	5%	1/4W (CIS)
R1711	1-249-429-11	CARBON	10K	5%	1/4W (CIS)
R1714	1-249-426-11	CARBON	5.6K	5%	1/4W (CIS)
R1715	1-249-426-11	CARBON	5.6K	5%	1/4W (CIS)
R1716	1-249-441-11	CARBON	100K	5%	1/4W (CIS)
R1717	1-249-441-11	CARBON	100K	5%	1/4W (CIS)
R1718	1-249-429-11	CARBON	10K	5%	1/4W (CIS)
R1719	1-249-429-11	CARBON	10K	5%	1/4W (CIS)
R1721	1-249-434-11	CARBON	27K	5%	1/4W (CIS)
R1722	1-249-441-11	CARBON	100K	5%	1/4W (CIS)

< VARIABLE RESISTOR >

RV1701	1-238-600-11	RES, ADJ, CARBON 10K (SUB CARRIER)	(CIS)
RV1702	1-238-599-11	RES, ADJ, CARBON 4.7K (VCO FREQUENCY)	(CIS)

< TEST PIN >

* TP1701	1-560-061-00	PIN, CONNECTOR 3P	(CIS)
* TP1702	1-560-061-00	PIN, CONNECTOR 3P	(CIS)

****

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		*************	
7	1-765-242-31	WIRE (FLAT TYPE) (19 CORE)	
15	1-751-688-11	WIRE (FLAT TYPE) (13 CORE) (CIS)	
E101	1-537-770-11	TERMINAL BOARD, GROUND	
E102	1-537-770-11	TERMINAL BOARD, GROUND	
**********			
		ACCESSORIES & PACKING MATERIALS	
		********************************	
*	4-972-591-01	CUSHION (ST) (FRONT)	(AEP:Made in France, UK, IT, G)
*	4-972-592-01	CUSHION (ST) (REAR)	(AEP:Made in France, UK, IT, G)
*	4-972-593-01	INDIVIDUAL CARTON	(AEP:Made in France, UK, IT, G)
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3×8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3×6 (S)	

9-960-074-11

Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

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Quality Engineering Dept.

TA-EX5

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

TA-EX5 is amplifier section in MHC-EX5.

SPECIFICATIONS

Integrated stereo amplifier
40 W + 40 W (6 ohms, at 1 kHz, DIN)
Continuous RMS power output
50 W + 50 W (6 ohms, at 1 kHz, 5% THD)
Music power output
100 W + 100 W (6 ohms at 1 kHz, 10% THD)
Inputs
CD (phono jacks):
MD/DAT (phono jacks):
sensitivity 450 mV, impedance 47 kilohms
TUNER (phono jacks):
AUX/VIDEO (phono jacks):
TAPE1 (phono jacks):
TAPE2 (phono jacks):
sensitivity 250 mV, impedance 47 kilohms
Outputs
MD/DAT (phono jacks):
voltage 250 mV
impedance 1 kilohm
HEADPHONES (stereo phono jack):
accepts headphones of 8 ohms or more
TAPE1 (phono jacks):
TAPE2 (phono jacks):
voltage 250mV
impedance 1 kilohm

Dimensions
Approx. 280 x 125 x 315 mm (w/h/d)
(11 1/8 x 5 x 12 1/2 inches)
Mass Approx. 5.5 kg
(12 lb 3 oz)

General

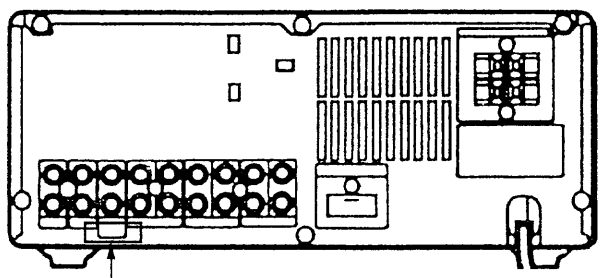
Power requirements

Destination	Power requirements
Australian model	220 – 240V AC, 50Hz
AEP, UK, German, Italian, CIS, East European model	220 – 230V AC,50/60Hz
E, Saudi Arabia, Mexican, Malaysia, Singapore, Hong Kong, Tourist model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector

Design and specifications subject to change without notice.

MINI Hi-Fi COMPONENT SYSTEM

SONY®



MODEL IDENTIFICATION

– BACK PANEL –

MODEL	PARTS NO.
AEP 2	4-970-969-0☐
German	4-970-969-1☐
UK	4-970-969-2☐
AEP, CIS	4-970-969-3☐
UK 1	4-970-969-4☐
EE	4-970-969-5☐
Italian	4-970-969-6☐
E, Saudi Arabia, Malaysia, Mexican, Singapore, Tourist	4-970-969-7☐
Australian	4-970-969-8☐
Hong Kong	4-970-969-9☐

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

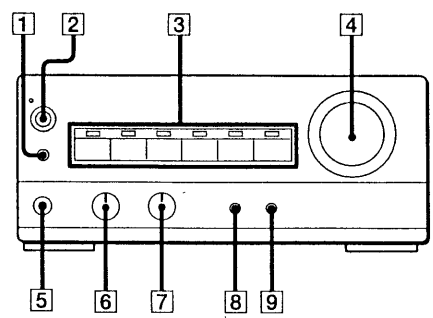
SECTION 1
GENERAL

This section is extracted from instruction manual.

Index to Parts and Controls

Refer to the pages indicated in parentheses for details on how to use the controls. Controls with an asterisk have indicators on themselves.

Integrated stereo amplifier



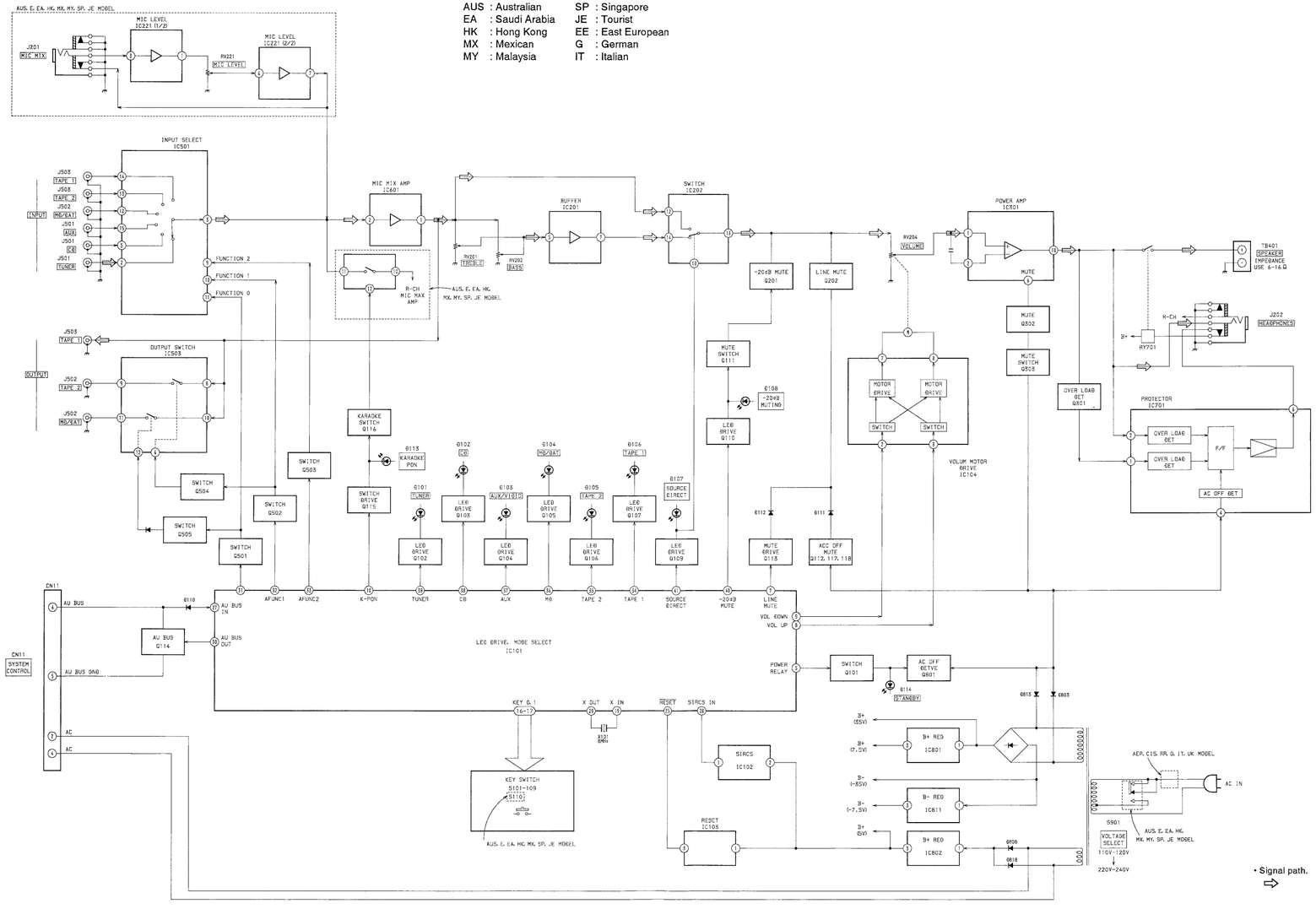
1 Remote sensor
2 SYSTEM POWER switch and ON/STANDBY indicator (7)
The indicator remains lit as long as the AC power cord is connected to a wall outlet.
3 FUNCTION buttons* (19, 23)
TAPE 1 (23)
TAPE 2 (23)
MD/DAT (23)
AUX/VIDEO (24)
CD (15)
TUNER (19)
4 VOLUME control (5, 7, 20)
5 HEADPHONES jack (20, 23)
6 BASS control (20)
7 TREBLE control (20)
8 SOURCE DIRECT button* (20)
9 MUTING button* (20)

SECTION 2
DIAGRAMS

2-1. BLOCK DIAGRAM

● Abbreviation

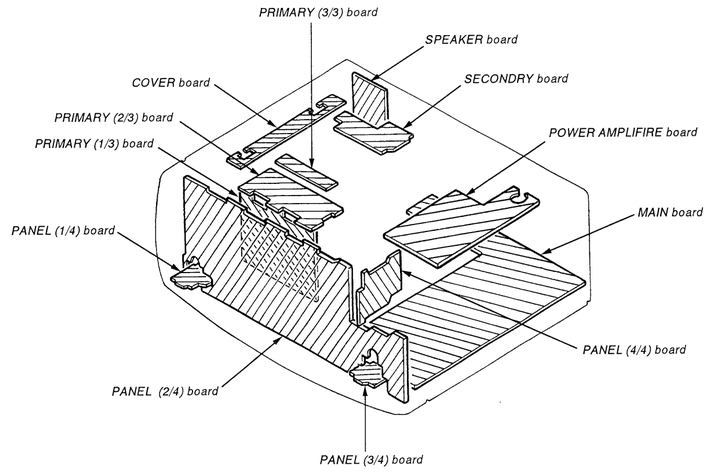
AUS	: Australian	SP	: Singapore
EA	: Saudi Arabia	JE	: Tourist
HK	: Hong Kong	EE	: East European
MX	: Mexican	G	: German
MY	: Malaysia	IT	: Italian



• Signal path.

02

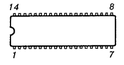
● CIRCUIT BOARD LOCATION



● SEMICONDUCTOR LEAD LAYOUTS

BA6208

MC14066BCP

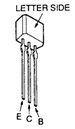


M5218AP NJM4565D

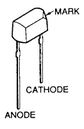
(Top view)

μPC1237HA

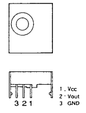
2SC3623A-LK



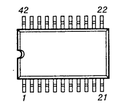
SEL5221S



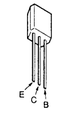
GP1U58XB



M37471M2-281SP

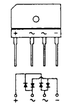


DTA124ES DTC124ES 2SC2603-EF



PST600C-T

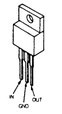
D5SBA20F01



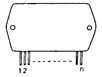
TLO124

MC14051BCP MC14052BCP

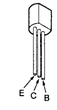
M5F7807L M5F7907L TA7805S



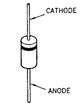
STK4152MK2K STK4162MK2



2SC1841-PAFAEA



1N4148M 10E2



2-2. PRINTED WIRING BOARDS

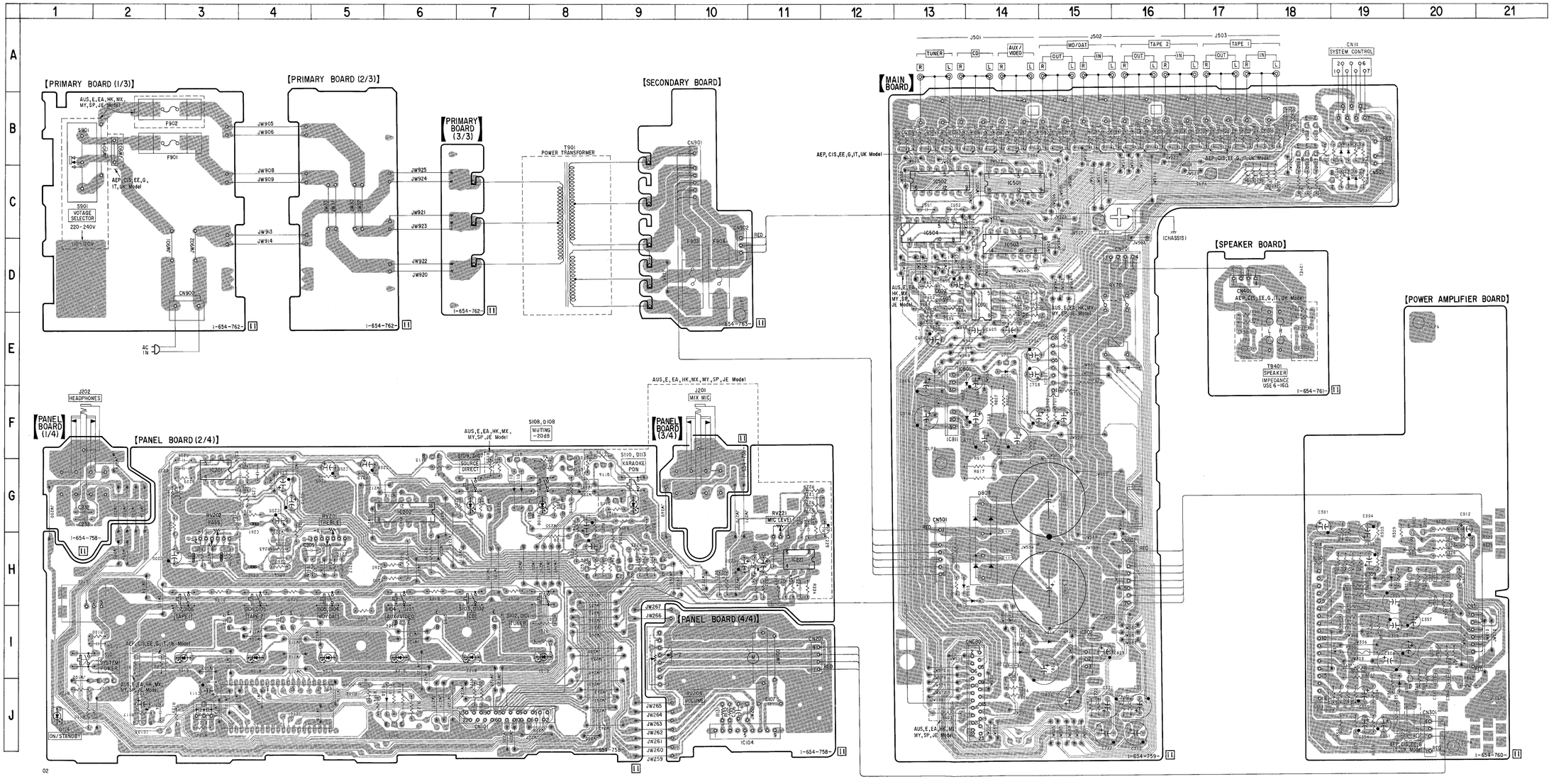
● Refer to page 5 for Semiconductor Lead Layouts.

● SEMICONDUCTOR LOCATION

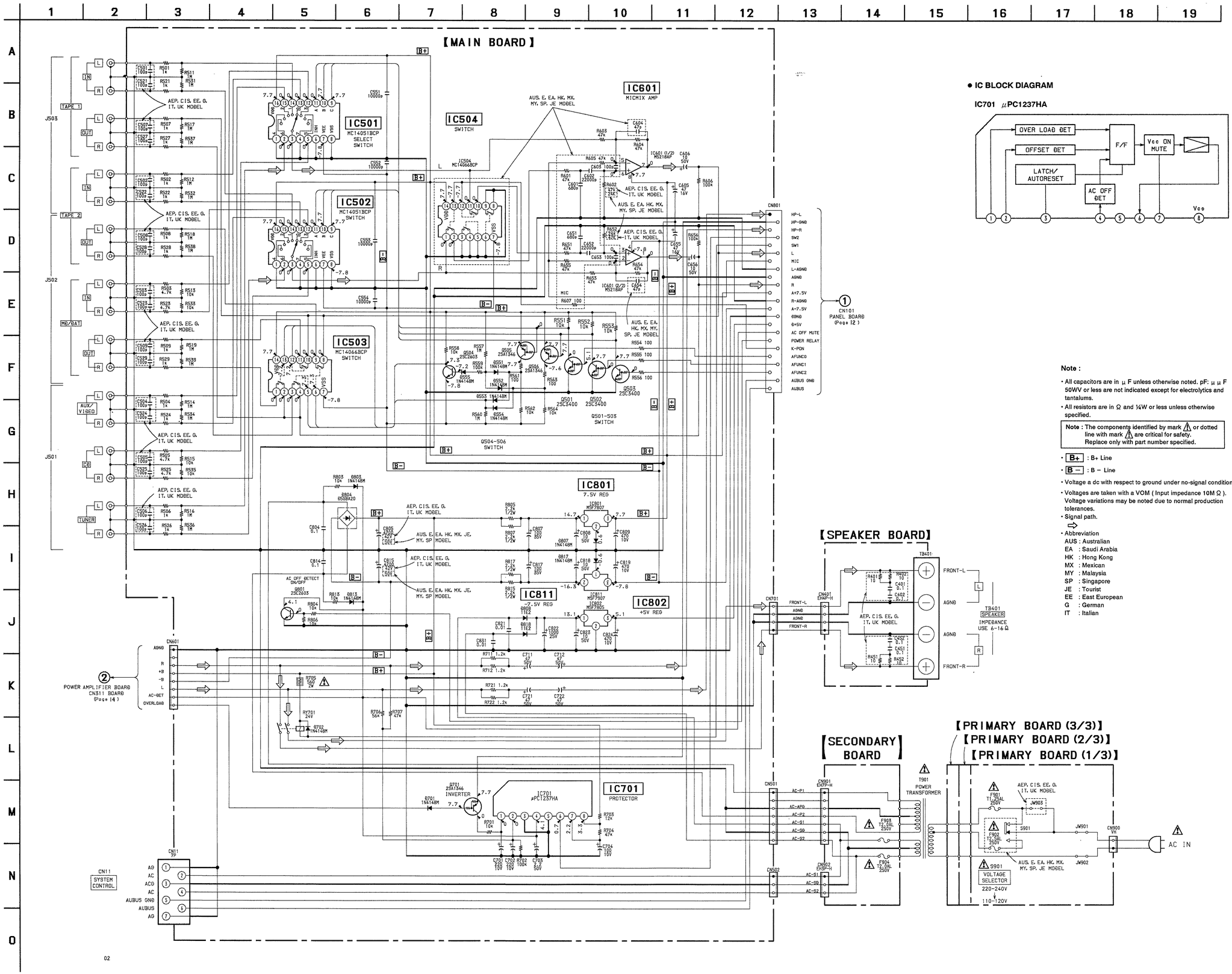
Ref. No.	Location	Ref. No.	Location
D101	I-8	IC601	D-14
D102	J-7	IC701	E-15
D103	J-6	IC801	E-13
D104	I-5	IC802	I-15
D105	I-4	IC811	F-13
D106	I-3		
D107	G-7	Q101	I-2
D108	G-8	Q102	I-7
D110	J-5	Q103	I-6
D111	G-7	Q104	I-6
		Q105	I-4
D112	G-7		
D113	G-9	Q106	I-4
D114	J-1	Q107	I-3
D301	H-19	Q109	G-7
D351	I-19	Q110	G-8
		Q111	G-7
D551	C-19		
D552	C-19	Q112	G-8
D553	B-19	Q113	F-6
D554	B-18	Q114	J-6
D555		Q115	G-9
		Q116	F-8
D701	E-14		
D702	E-16	Q117	F-8
D803	H-13	Q118	F-7
D804	G-14	Q201	H-9
D807	E-13	Q202	H-9
		Q251	H-8
D808	I-14		
D813	H-13	Q252	H-9
D817	F-13	Q301	H-19
D818	I-14	Q302	G-20
		Q303	G-19
		Q351	I-19
IC101	J-4		
IC102	H-1	Q501	B-18
IC103	J-2	Q502	B-18
IC104	J-10	Q503	B-18
IC201	G-3	Q504	C-18
		Q505	B-18
IC202	G-6		
IC221	H-11	Q506	B-18
IC301	I-18	Q701	E-14
IC501	C-14	Q801	I-14
IC502	C-13		
IC503	D-14		
IC504	C-13		

Note:

- ○— : parts extracted from the component side.
- ▒▒ : Pattern on the side which is seen.
- Abbreviation
  - AUS : Australian
  - EA : Saudi Arabia
  - HK : Hong Kong
  - MX : Mexican
  - MY : Malaysia
  - SP : Singapore
  - JE : Tourist
  - EE : East European
  - G : German
  - IT : Italian



2-3. SCHEMATIC DIAGRAM – MAIN SECTION



● IC BLOCK DIAGRAM

IC701 μPC1237HA

Note :

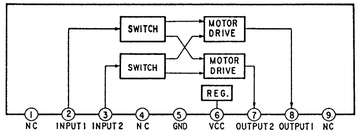
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

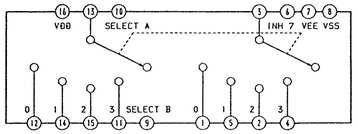
- B+ : B+ Line
- B− : B − Line
- Voltage a dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path. ⇨
- Abbreviation
  AUS : Australian
  EA : Saudi Arabia
  HK : Hong Kong
  MX : Mexican
  MY : Malaysia
  SP : Singapore
  JE : Tourist
  EE : East European
  G : German
  IT : Italian

● IC BLOCK DIAGRAMS

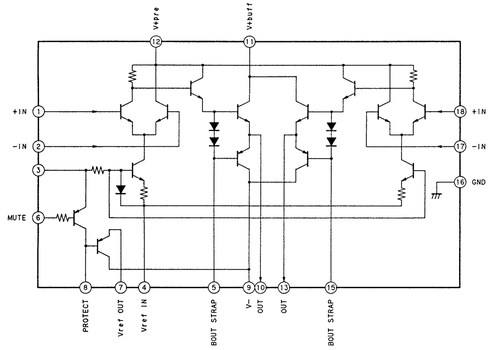
IC104 BA6208BCP



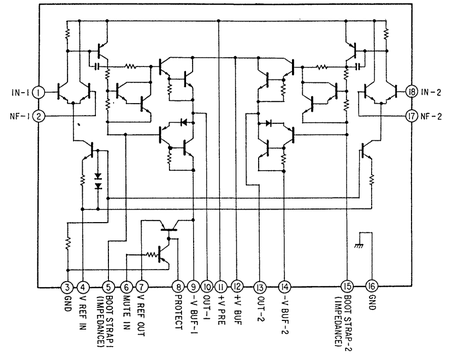
IC202 MC14052



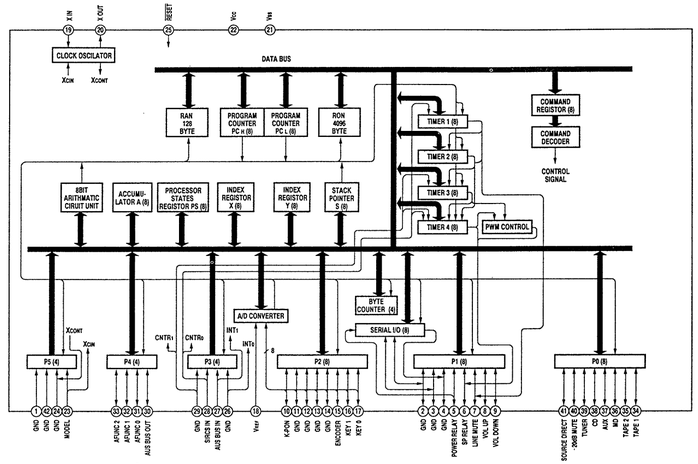
IC301 STK4152MK2 (E, AUS, EA, HK, JE, MX, MY, SP MODEL)



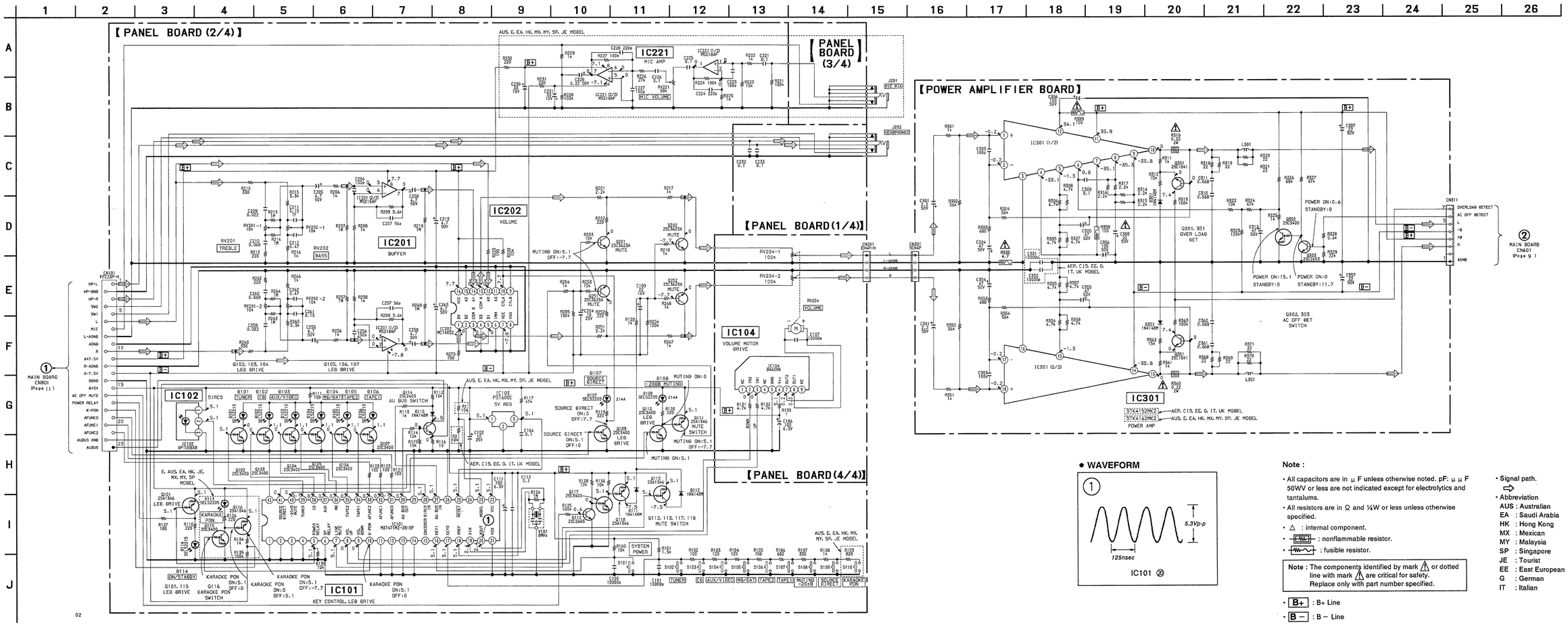
IC301 STK4162MK2 (AEP, UK, G, IT, EE, CIS MODEL)



IC101 M37471MZ-281SP



2-4. SCHEMATIC DIAGRAM – PANEL SECTION –



● WAVEFORM

Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.
- : nonflammable resistor.
- : fusible resistor.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- B+ : B+ Line
- B – : B – Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

- Signal path.
- Abbreviation
  - AUS : Australian
  - EA : Saudi Arabia
  - HK : Hong Kong
  - MX : Mexican
  - MY : Malaysia
  - SP : Singapore
  - JE : Tourist
  - EE : East European
  - G : German
  - IT : Italian

SECTION 3
EXPLODED VIEWS

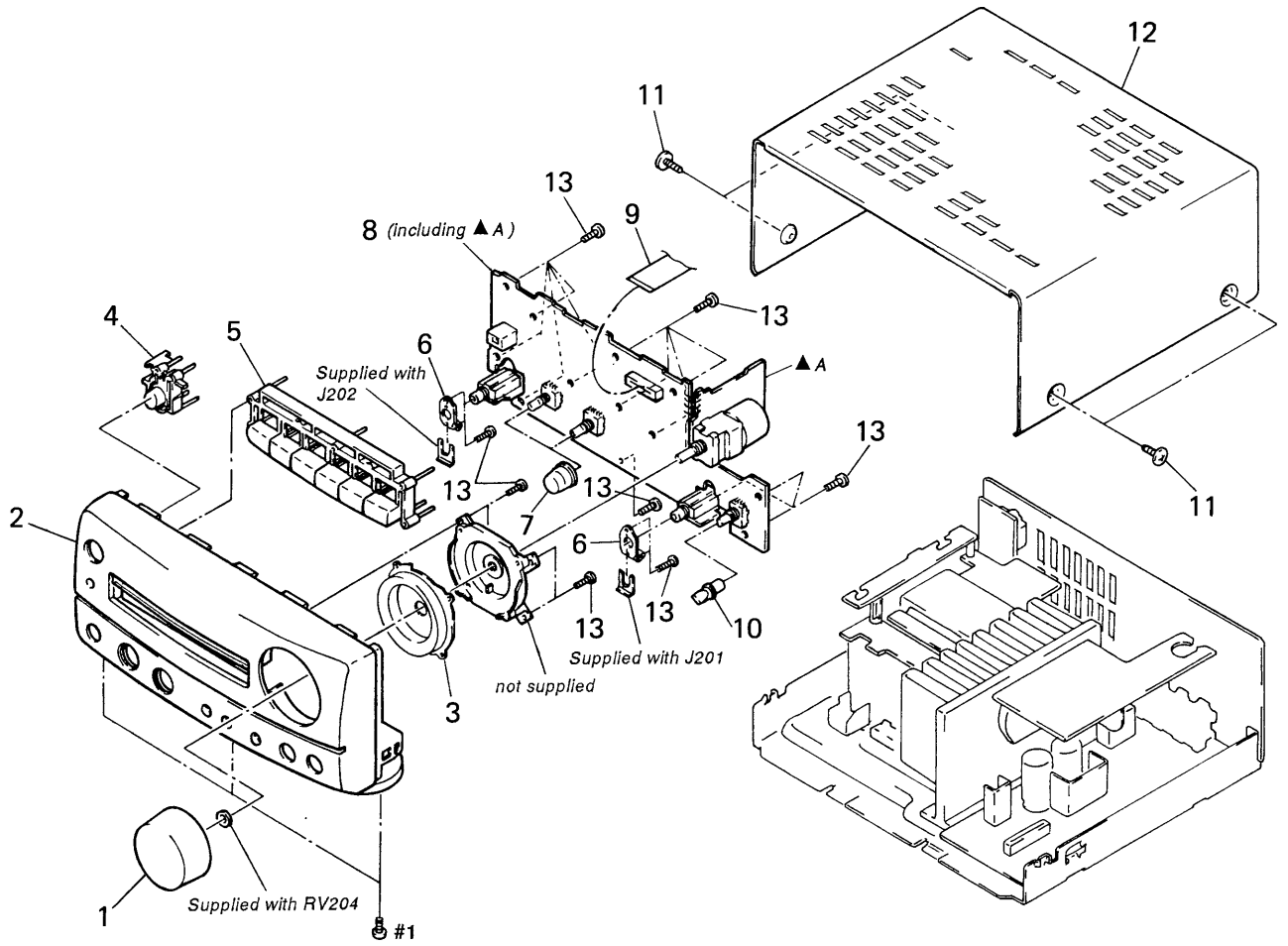
NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation

AUS	: Australian	SP	: Singapore
EA	: Saudi Arabia	JE	: Tourist
HK	: Hong Kong	EE	: East European
MX	: Mexican	G	: German
MY	: Malaysia	IT	: Italian

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

3-1. FRONT PANEL SECTION

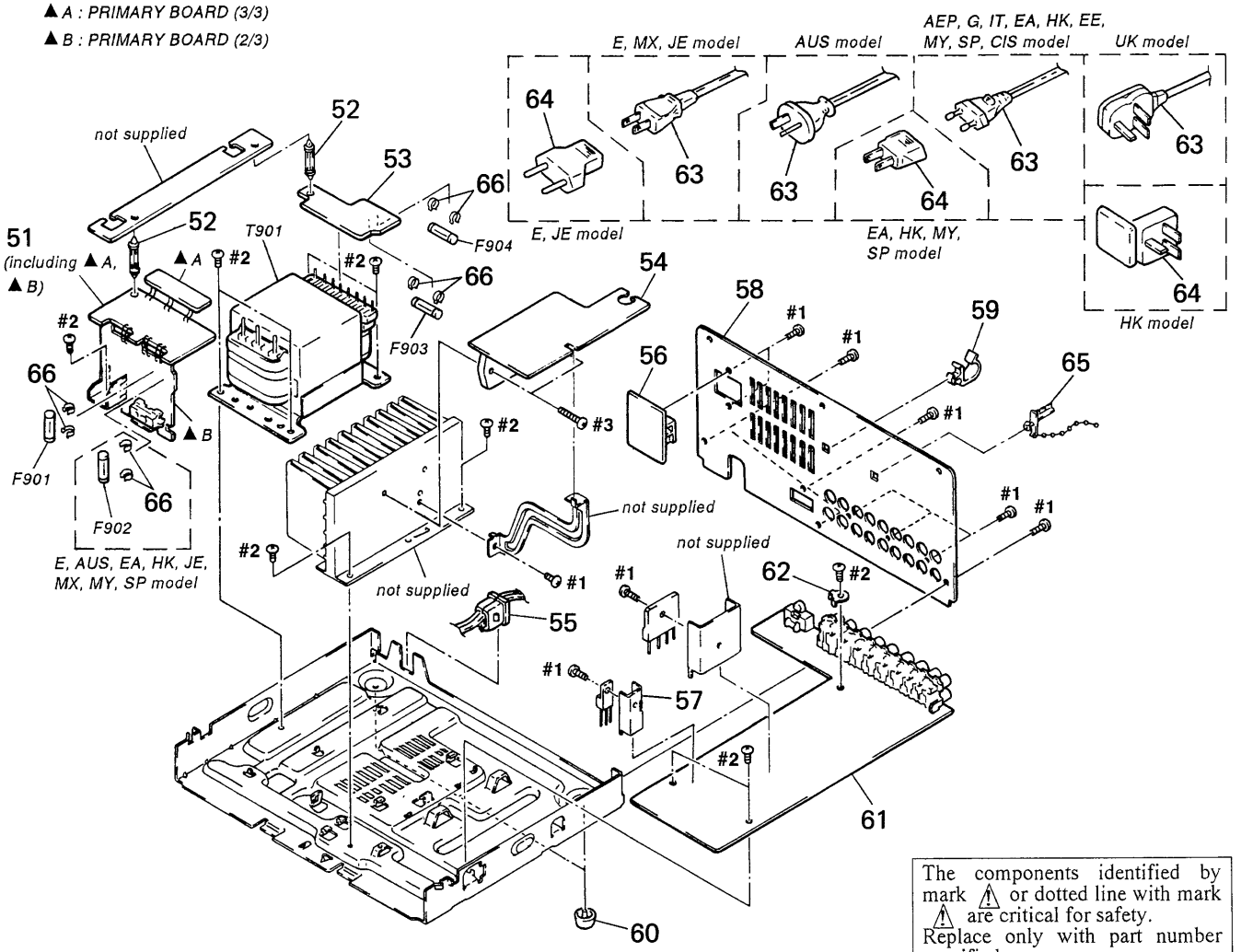


Ref. No.	Part No.	Description	Remark
1	4-970-944-01	KNOB (VOL)	
2	X-4945-434-1	PANEL ASSY, FRONT (AEP, UK, G, IT, EE, CIS)	
2	X-4945-435-1	PANEL ASSY, FRONT (E, AUS, EA, HK, JE, MX, MY, SP)	
3	4-970-967-01	PLATE (VOL), ORNAMENTAL	
4	4-970-962-01	BUTTON (POWER)	
5	4-970-942-01	BUTTON (FUNC)	
* 6	4-970-946-01	BRACKET (HP)	
7	4-970-965-01	KNOB (TONE)	
* 8	A-4371-988-A	PANEL BOARD, COMPLETE (AEP, UK, G, IT, EE, CIS)	
* 8	A-4371-989-A	PANEL BOARD, COMPLETE (E, AUS, EA, HK, JE, MX, MY, SP)	
* 9	1-769-784-11	WIRE (FLAT TYPE) (23 CORE)	
10	4-970-966-0	KNOB (K)	
11	3-363-099-01	SCREW (CASE 3 TP2)	
12	3-919-558-71	CASE	
13	4-951-620-01	SCREW (2.6×8), +BVTP	

3-2. CHASSIS SECTION

▲A : PRIMARY BOARD (3/3)

▲B : PRIMARY BOARD (2/3)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	1-654-762-11	PRIMARY BOARD	
* 52	4-385-948-01	HOLDER, PCB	
* 53	1-654-763-11	SECONDARY BOARD	
* 54	A-4371-980-A	POWER AMPLIFIER BOARD, COMPLETE	(AEP, UK, G, IT, EE, CIS)
* 54	A-4371-981-A	POWER AMPLIFIER BOARD, COMPLETE	(E, AUS, EA, HK, JE, MX, MY, SP)
* 55	3-703-244-00	BUSHING (2104), CORD	(AEP, UK, G, IT, AUS, EA, EE, HK, MY, SP, CIS)
* 55	3-703-571-11	BUSHING (S) (4516), CORD (E, JE, MX)	
* 56	1-654-761-11	SPEAKER BOARD	
* 57	3-309-144-21	HEAT SINK	
* 58	4-970-969-01	PANEL, BACK (AEP2)	
* 58	4-970-969-11	PANEL, BACK (G)	
* 58	4-970-969-21	PANEL, BACK (UK)	
* 58	4-970-969-31	PANEL, BACK (AEP, CIS)	
* 58	4-970-969-41	PANEL, BACK (UK1)	
* 58	4-970-969-51	PANEL, BACK (EE)	
* 58	4-970-969-61	PANEL, BACK (IT)	
* 58	4-970-969-71	PANEL, BACK (E, EA, JE, MX, MY, SP)	
* 58	4-970-969-81	PANEL, BACK (AUS)	
* 58	4-970-969-91	PANEL, BACK (HK)	
* 59	4-949-235-01	HOOK (AEP, E, G, IT, EA, EE, JE, MX, MY, SP, CIS)	

Ref. No.	Part No.	Description	Remark
60	4-965-822-01	FOOT	
* 61	A-4371-978-A	MAIN BOARD, COMPLETE	(AEP, UK, G, IT, EE, CIS)
* 61	A-4371-979-A	MAIN BOARD, COMPLETE	(E, AUS, EA, HK, JE, MX, MY, SP)
* 62	4-942-204-01	PLATE, GROUND	
⚠63	1-574-902-11	CORD, POWER (E, JE, MX)	
⚠63	1-575-651-11	CORD, POWER	(AEP, G, IT, EA, EE, HK, MY, SP, CIS)
⚠63	1-690-608-11	CORD, POWER (AUS)	
⚠63	1-696-570-21	CORD, POWER (UK)	
⚠64	1-569-007-11	ADAPTER, CONVERSION 2P (E, JE)	
⚠64	1-569-008-11	ADAPTER, CONVERSION 2P (EA, HK, MY, SP)	
⚠64	1-770-019-11	ADAPTOR, CONVERSION (HK)	
65	4-956-370-02	BAND, PLUG FIXED (UK, AUS, HK)	
66	1-533-293-11	FUSE HOLDER	
⚠T901	1-427-700-11	TRANSFORMER, POWER	(E, AUS, EA, HK, JE, MX, MY, SP)
⚠T901	1-427-701-11	TRANSFORMER, POWER (AEP, UK, G, IT, EE, CIS)	
⚠F902	1-532-286-00	FUSE (3.15A/250V)	(E, AUS, EA, HK, JE, MX, MY, SP)
⚠F903	1-532-203-00	FUSE (2A/250V)	
⚠F904	1-532-203-00	FUSE (2A/250V)	

SECTION 4
ELECTRICAL PARTS LIST

MAIN

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

- Abbreviation

AUS	: Australian	SP	: Singapore
EA	: Saudi Arabia	JE	: Tourist
HK	: Hong Kong	EE	: East European
MX	: Mexican	G	: German
MY	: Malaysia	IT	: Italian

Ref.No.	Part No.	Description			Remark
*	A-4371-978-A	MAIN BOARD, COMPLETE			(AEP, UK, G, IT, EE, CIS)
*	A-4371-979-A	MAIN BOARD, COMPLETE			(E, AUS, EA, HK, JE, MX, MY, SP)
		**********			
*	3-309-144-21	HEAT SINK			
*	4-942-204-01	PLATE, GROUND			
		< CAPACITOR >			
C501-509					
	1-162-282-31	CERAMIC	100PF	10%	50V
					(AEP, UK, G, IT, EE, CIS)
C521-529					
	1-162-282-31	CERAMIC	100PF	10%	50V
					(AEP, UK, G, IT, EE, CIS)
C551-554					
	1-162-306-11	CERAMIC	0.01uF	30%	16V
C601	1-162-292-31	CERAMIC	680PF	10%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C602	1-161-494-00	CERAMIC	0.022uF		25V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C603	1-162-282-31	CERAMIC	100PF	10%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C604	1-162-215-31	CERAMIC	47PF	5%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C605	1-126-022-11	ELECT	47uF	20%	16V
C606	1-126-059-11	ELECT	10uF	20%	50V
C651	1-162-292-31	CERAMIC	680PF	10%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C652	1-161-494-00	CERAMIC	0.022uF		25V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C653	1-162-282-31	CERAMIC	100PF	10%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C654	1-162-215-31	CERAMIC	47PF	5%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C655	1-126-022-11	ELECT	47uF	20%	16V
C656	1-126-059-11	ELECT	10uF	20%	50V

Ref.No.	Part No.	Description			Remark
C701	1-126-101-11	ELECT	100uF	20%	16V
C702	1-126-101-11	ELECT	100uF	20%	16V
C703	1-126-161-11	ELECT	2.2uF	20%	50V
C704	1-124-994-11	ELECT	100uF	20%	10V
C711	1-124-910-11	ELECT	47uF	20%	50V
C712	1-124-910-11	ELECT	47uF	20%	50V
C721	1-124-910-11	ELECT	47uF	20%	50V
C722	1-124-910-11	ELECT	47uF	20%	50V
C804	1-136-165-00	FILM	0.1uF	5%	50V
C805	1-126-224-11	ELECT	4700uF	20%	42V
					(AEP, UK, G, IT, EE, CIS)
C805	1-126-138-11	ELECT	4700uF	20%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C807	1-124-122-11	ELECT	100uF	20%	50V
C808	1-126-059-11	ELECT	10uF	20%	50V
C809	1-124-997-11	ELECT	470uF	20%	10V
C814	1-136-165-00	FILM	0.1uF	5%	50V
C815	1-126-224-11	ELECT	4700uF	20%	42V
					(AEP, UK, G, IT, EE, CIS)
C815	1-126-138-11	ELECT	4700uF	20%	50V
					(E, AUS, EA, HK, JE, MX, MY, SP)
C817	1-124-122-11	ELECT	100uF	20%	50V
C818	1-126-059-11	ELECT	10uF	20%	50V
C819	1-124-997-11	ELECT	470uF	20%	10V
C821	1-136-153-00	FILM	0.01uF	5%	50V
C822	1-126-942-61	ELECT	1000uF	20%	25V
C823	1-126-059-11	ELECT	10uF	20%	50V
C824	1-124-997-11	ELECT	470uF	20%	10V
C831	1-136-153-00	FILM	0.01uF	5%	50V
		< CONNECTOR >			
CN11	1-770-158-31	SOCKET, CONNECTOR 7P (SYSTEM CONTROL)			
CN501	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			
CN601	1-691-769-11	PLUG (MICRO CONNECTOR) 7P			
* CN701	1-564-507-11	PLUG, CONNECTOR 4P			
* CN801	1-568-839-11	SOCKET, CONNECTOR 23P			

MAIN

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D551-554			
	8-719-987-63	DIODE 1N4148M	
D701	8-719-987-63	DIODE 1N4148M	
D702	8-719-987-63	DIODE 1N4148M	
D803	8-719-987-63	DIODE 1N4148M	
D804	8-719-510-68	DIODE D5SBA20F01	
D807	8-719-987-63	DIODE 1N4148M	
D808	8-719-200-02	DIODE 10E2	
D813	8-719-987-63	DIODE 1N4148M	
D817	8-719-987-63	DIODE 1N4148M	
D818	8-719-200-02	DIODE 10E2	
		< IC >	
IC501	8-759-000-47	IC MC14051BCP	
IC502	8-759-000-47	IC MC14051BCP	
IC503	8-759-000-49	IC MC14066BCP	
IC504	8-759-000-49	IC MC14066BCP	(E, AUS, EA, HK, JE, MX, MY, SP)
IC601	8-759-634-51	IC M5218AP	(E, AUS, EA, HK, JE, MX, MY, SP)
IC601	8-759-167-88	IC NJM4565D	
IC701	8-759-111-68	IC uPC1237HA	
IC801	8-759-604-86	IC M5F7807L	
IC802	8-759-231-53	IC TA7805S	
IC811	8-759-604-90	IC M5F7907L	
		< JACK >	
J501	1-770-015-11	JACK, PIN 6P	(TUNER/CD/AUX/VIDEO INPUT)
J502	1-770-015-11	JACK, PIN 6P	(MD/DAT INPUT/OUTPUT, TAPE 2 OUTPUT)
J503	1-770-015-11	JACK, PIN 6P	(TAPE 1 INPUT/OUTPUT, TAPE 2 INPUT)
		< TRANSISTOR >	
Q501-503			
	8-729-900-36	TRANSISTOR DTC124ES	
Q504	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q505	8-729-900-63	TRANSISTOR DTA124ES	
Q506	8-729-900-63	TRANSISTOR DTA124ES	
Q701	8-729-900-63	TRANSISTOR DTA124ES	
Q801	8-729-620-05	TRANSISTOR 2SC2603-EF	
		< RESISTOR >	
R501	1-249-417-11	CARBON 1K 5% 1/4W	
R502	1-249-417-11	CARBON 1K 5% 1/4W	
R503	1-249-425-11	CARBON 4.7K 5% 1/4W	
R504	1-249-417-11	CARBON 1K 5% 1/4W	
R505	1-249-425-11	CARBON 4.7K 5% 1/4W	
R506-509			
	1-249-417-11	CARBON 1K 5% 1/4W	
R511	1-247-903-00	CARBON 1M 5% 1/4W	
R512	1-247-903-00	CARBON 1M 5% 1/4W	
R513	1-249-429-11	CARBON 10K 5% 1/4W	
R514	1-247-903-00	CARBON 1M 5% 1/4W	
R515	1-249-429-11	CARBON 10K 5% 1/4W	
R516-519			
	1-247-903-00	CARBON 1M 5% 1/4W	
R521	1-249-417-11	CARBON 1K 5% 1/4W	
R522	1-249-417-11	CARBON 1K 5% 1/4W	
R523	1-249-425-11	CARBON 4.7K 5% 1/4W	
R524	1-249-417-11	CARBON 1K 5% 1/4W	
R525	1-249-425-11	CARBON 4.7K 5% 1/4W	
R526	1-249-417-11	CARBON 1K 5% 1/4W	
R527-529			
	1-249-417-11	CARBON 1K 5% 1/4W	
R531	1-247-903-00	CARBON 1M 5% 1/4W	
R532	1-247-903-00	CARBON 1M 5% 1/4W	
R533	1-249-429-11	CARBON 10K 5% 1/4W	
R534	1-247-903-00	CARBON 1M 5% 1/4W	
R535	1-249-429-11	CARBON 10K 5% 1/4W	
R536-539			
	1-247-903-00	CARBON 1M 5% 1/4W	
R551	1-249-429-11	CARBON 10K 5% 1/4W	
R552	1-249-429-11	CARBON 10K 5% 1/4W	
R553	1-249-429-11	CARBON 10K 5% 1/4W	
R554-556			
	1-247-807-31	CARBON 100 5% 1/4W	
R557	1-247-903-00	CARBON 1M 5% 1/4W	
R558	1-249-429-11	CARBON 10K 5% 1/4W	
R559	1-249-441-11	CARBON 100K 5% 1/4W	
R560	1-247-903-00	CARBON 1M 5% 1/4W	
R561	1-247-807-31	CARBON 100 5% 1/4W	
R562	1-249-429-11	CARBON 10K 5% 1/4W	
R563	1-247-807-31	CARBON 100 5% 1/4W	
R564	1-249-429-11	CARBON 10K 5% 1/4W	
R601	1-249-437-11	CARBON 47K 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R602	1-247-864-11	CARBON 24K 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R602	1-249-437-11	CARBON 47K 5% 1/4W	(AEP, UK, G, IT, EE, CIS)
R603	1-249-437-11	CARBON 47K 5% 1/4W	
R604	1-249-437-11	CARBON 47K 5% 1/4W	
R605	1-249-437-11	CARBON 47K 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R606	1-249-441-11	CARBON 100K 5% 1/4W	
R607	1-247-807-31	CARBON 100 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
R651	1-249-437-11	CARBON	47K	5%	1/4W	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
R652	1-247-864-11	CARBON	24K	5%	1/4W	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
R652	1-249-437-11	CARBON	47K	5%	1/4W	
			(AEP, UK, G, IT, EE, CIS)			
R653	1-249-437-11	CARBON	47K	5%	1/4W	
R654	1-249-437-11	CARBON	47K	5%	1/4W	
R655	1-249-437-11	CARBON	47K	5%	1/4W	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
R656	1-249-441-11	CARBON	100K	5%	1/4W	
R701	1-249-429-11	CARBON	10K	5%	1/4W	
R702	1-249-441-11	CARBON	100K	5%	1/4W	
R703	1-249-430-11	CARBON	12K	5%	1/4W	
R704	1-249-437-11	CARBON	47K	5%	1/4W	
⚠R705	1-216-455-11	METAL OXIDE	560	5%	2W	F
R706	1-249-438-11	CARBON	56K	5%	1/4W	
R707	1-249-437-11	CARBON	47K	5%	1/4W	
R711	1-249-418-11	CARBON	1.2K	5%	1/4W	
R712	1-249-418-11	CARBON	1.2K	5%	1/4W	
R721	1-249-418-11	CARBON	1.2K	5%	1/4W	
R722	1-249-418-11	CARBON	1.2K	5%	1/4W	
R803	1-249-429-11	CARBON	10K	5%	1/4W	
R804	1-249-429-11	CARBON	10K	5%	1/4W	
R805	1-260-103-11	CARBON	2.2K	5%	1/2W	
R806	1-249-429-11	CARBON	10K	5%	1/4W	
R807	1-260-103-11	CARBON	2.2K	5%	1/2W	
R813	1-249-429-11	CARBON	10K	5%	1/4W	
R815	1-260-103-11	CARBON	2.2K	5%	1/2W	
R817	1-260-103-11	CARBON	2.2K	5%	1/2W	
		< RELAY >				
RY701	1-515-920-11	RELAY (24V)				
**********						
*	A-4371-988-A	PANEL BOARD, COMPLETE				
			(AEP, UK, G, IT, EE, CIS)			
*	A-4371-989-A	PANEL BOARD, COMPLETE				
			(E, AUS, EA, HK, JE, MX, MY, SP)			
		**********				
		< CAPACITOR >				
C100	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C101	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C102	1-126-096-11	ELECT	10uF	20%	35V	
C104	1-164-159-11	CERAMIC	0.1uF		50V	
C106	1-126-177-11	ELECT	100uF	20%	10V	
C107	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C109	1-124-234-00	ELECT	22uF	20%	16V	

Ref.No.	Part No.	Description				Remark
C111	1-126-177-11	ELECT	100uF	20%	10V	
C112	1-164-159-11	CERAMIC	0.1uF		50V	
C204	1-126-096-11	ELECT	10uF	20%	35V	
C205	1-126-163-11	ELECT	4.7uF	20%	50V	
C206	1-162-282-31	CERAMIC	100PF	10%	50V	
C207	1-162-217-31	CERAMIC	56PF	5%	50V	
C208	1-126-163-11	ELECT	4.7uF	20%	50V	
C209	1-136-157-00	FILM	0.022uF	5%	50V	
C210	1-136-163-00	FILM	0.068uF	5%	50V	
C211	1-136-167-00	FILM	0.15uF	5%	50V	
C212	1-136-173-00	FILM	0.47uF	5%	50V	
C213	1-126-163-11	ELECT	4.7uF	20%	50V	
C221	1-164-159-11	CERAMIC	0.1uF		50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C223	1-162-282-31	CERAMIC	100PF	10%	50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C224	1-162-286-21	CERAMIC	220PF	10%	50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C225	1-164-159-11	CERAMIC	0.1uF		50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C226	1-164-159-11	CERAMIC	0.1uF		50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C227	1-162-282-31	CERAMIC	100PF	10%	50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C228	1-162-286-21	CERAMIC	220PF	10%	50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C229	1-124-464-11	ELECT	0.22uF	20%	50V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C230	1-124-229-00	ELECT	33uF	20%	10V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C231	1-124-229-00	ELECT	33uF	20%	10V	
			(E, AUS, EA, HK, JE, MX, MY, SP)			
C232	1-164-159-11	CERAMIC	0.1uF		50V	
C233	1-164-159-11	CERAMIC	0.1uF		50V	
C255	1-126-163-11	ELECT	4.7uF	20%	50V	
C256	1-162-282-31	CERAMIC	100PF	10%	50V	
C257	1-162-217-31	CERAMIC	56PF	5%	50V	
C258	1-126-163-11	ELECT	4.7uF	20%	50V	
C259	1-136-157-00	FILM	0.022uF	5%	50V	
C260	1-136-163-00	FILM	0.068uF	5%	50V	
C261	1-136-167-00	FILM	0.15uF	5%	50V	
C262	1-136-173-00	FILM	0.47uF	5%	50V	
C263	1-126-163-11	ELECT	4.7uF	20%	50V	
		< CONNECTOR >				
* CN101	1-568-839-11	SOCKET, CONNECTOR 23P				
* CN201	1-564-507-11	PLUG, CONNECTOR 4P				
		< DIODE >				
D101	8-719-046-44	LED SEL5221S (TUNER)				

PANEL

Ref. No.	Part No.	Description	Remark
D102	8-719-046-44	LED SEL5221S (CD)	
D103	8-719-046-44	LED SEL5221S (AUX/VIDEO)	
D104	8-719-046-44	LED SEL5221S (MD/DAT)	
D105	8-719-046-44	LED SEL5221S (TAPE 2)	
D106	8-719-046-44	LED SEL5221S (TAPE 1)	
D107	8-719-812-44	LED TLO124 (SOURCE DIRECT)	
D108	8-719-812-44	LED TLO124 (MUTING -20dB)	
D110	8-719-987-63	DIODE 1N4148M	
D111	8-719-987-63	DIODE 1N4148M	
D112	8-719-987-63	DIODE 1N4148M	
D113	8-719-812-44	LED TLO124 (KARAOKE PON)	(E, AUS, EA, HK, JE, MX, MY, SP)
D114	8-719-046-44	LED SEL5221S (ON/STANDBY)	
		< IC >	
IC101	8-759-299-88	IC M37471M2-281SP	
IC102	8-749-923-11	IC GP1U58XB	
IC103	8-759-165-80	IC PST600C-T	
IC104	8-759-962-08	IC BA6208	
IC201	8-759-634-51	IC M5218AP	
IC202	8-759-000-48	IC MC14052BCP	
IC221	8-759-634-51	IC M5218AP	(E, AUS, EA, HK, JE, MX, MY, SP)
		< JACK >	
J201	1-507-854-00	JACK, PHONE (MIX MIC)	(E, AUS, EA, HK, JE, MX, MY, SP)
J202	1-507-854-11	JACK, PHONE (HEADPHONES)	
		< TRANSISTOR >	
Q101-107	8-729-900-36	TRANSISTOR DTC124ES	
Q109-111	8-729-900-36	TRANSISTOR DTC124ES	
Q112	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q113	8-729-900-63	TRANSISTOR DTA124ES	
Q114	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q115	8-729-900-36	TRANSISTOR DTC124ES	(E, AUS, EA, HK, JE, MX, MY, SP)
Q116	8-729-900-63	TRANSISTOR DTA124ES	(E, AUS, EA, HK, JE, MX, MY, SP)
Q117	8-729-900-36	TRANSISTOR DTC124ES	
Q118	8-729-900-63	TRANSISTOR DTA124ES	
Q201	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q202	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q251	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q252	8-729-141-30	TRANSISTOR 2SC3623A-LK	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R1	1-249-429-11	CARBON 10K 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R2	1-249-429-11	CARBON 10K 5% 1/4W	(AEP, UK, G, IT, EE, CIS)
R100	1-249-429-11	CARBON 10K 5% 1/4W	
R101	1-249-419-11	CARBON 1.5K 5% 1/4W	
R102	1-247-807-31	CARBON 100 5% 1/4W	
R103	1-249-406-11	CARBON 120 5% 1/4W	
R104	1-249-406-11	CARBON 120 5% 1/4W	
R105	1-247-811-31	CARBON 150 5% 1/4W	
R106	1-249-415-11	CARBON 680 5% 1/4W	
R107	1-249-411-11	CARBON 330 5% 1/4W	
R108	1-249-417-11	CARBON 1K 5% 1/4W	
R109	1-249-416-11	CARBON 820 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R110	1-249-409-11	CARBON 220 5% 1/4W	
R111	1-247-811-31	CARBON 150 5% 1/4W	
R112	1-249-429-11	CARBON 10K 5% 1/4W	
R113	1-249-417-11	CARBON 1K 5% 1/4W	
R114	1-249-429-11	CARBON 10K 5% 1/4W	
R115	1-249-429-11	CARBON 10K 5% 1/4W	
R116	1-249-393-11	CARBON 10 5% 1/4W	
R117	1-249-437-11	CARBON 47K 5% 1/4W	
R119	1-249-409-11	CARBON 220 5% 1/4W	
R120	1-249-409-11	CARBON 220 5% 1/4W	
R121-123	1-247-807-31	CARBON 100 5% 1/4W	
R124	1-247-903-00	CARBON 1M 5% 1/4W	
R125	1-249-441-11	CARBON 100K 5% 1/4W	
R126	1-249-409-11	CARBON 220 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R127	1-247-807-31	CARBON 100 5% 1/4W	
R128	1-249-429-11	CARBON 10K 5% 1/4W	
R129	1-249-417-11	CARBON 1K 5% 1/4W	
R131	1-249-425-11	CARBON 4.7K 5% 1/4W	
R132	1-249-425-11	CARBON 4.7K 5% 1/4W	
R134	1-249-417-11	CARBON 1K 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R135	1-249-441-11	CARBON 100K 5% 1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R136	1-249-429-11	CARBON 10K 5% 1/4W	
R139	1-249-429-11	CARBON 10K 5% 1/4W	
R200	1-249-429-11	CARBON 10K 5% 1/4W	
R201	1-249-421-11	CARBON 2.2K 5% 1/4W	
R202	1-249-409-11	CARBON 220 5% 1/4W	
R203	1-249-429-11	CARBON 10K 5% 1/4W	
R204	1-249-417-11	CARBON 1K 5% 1/4W	
R205	1-249-441-11	CARBON 100K 5% 1/4W	

Ref. No.	Part No.	Description				Remark
R206	1-249-417-11	CARBON	1K	5%	1/4W	
R207	1-247-903-00	CARBON	1M	5%	1/4W	
R208	1-249-417-11	CARBON	1K	5%	1/4W	
R209	1-247-844-11	CARBON	3.6K	5%	1/4W	
R210	1-249-411-11	CARBON	330	5%	1/4W	
R212	1-249-409-11	CARBON	220	5%	1/4W	
R213	1-247-903-00	CARBON	1M	5%	1/4W	
R214	1-247-903-00	CARBON	1M	5%	1/4W	
R215	1-249-423-11	CARBON	3.3K	5%	1/4W	
R216	1-249-417-11	CARBON	1K	5%	1/4W	
R217	1-249-417-11	CARBON	1K	5%	1/4W	
R218	1-249-417-11	CARBON	1K	5%	1/4W	
R219	1-247-903-00	CARBON	1M	5%	1/4W	
R220	1-247-807-31	CARBON	100	5%	1/4W	
R221	1-249-441-11	CARBON	100K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R222	1-249-417-11	CARBON	1K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R223	1-249-431-11	CARBON	15K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R224	1-249-441-11	CARBON	100K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R225	1-249-417-11	CARBON	1K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R226	1-249-434-11	CARBON	27K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R227	1-249-441-11	CARBON	100K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R228	1-249-441-11	CARBON	100K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R229	1-249-417-11	CARBON	1K	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R230	1-249-409-11	CARBON	220	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R231	1-249-409-11	CARBON	220	5%	1/4W	(E, AUS, EA, HK, JE, MX, MY, SP)
R251	1-249-421-11	CARBON	2.2K	5%	1/4W	
R252	1-249-409-11	CARBON	220	5%	1/4W	
R253	1-249-429-11	CARBON	10K	5%	1/4W	
R254	1-249-441-11	CARBON	100K	5%	1/4W	
R256	1-249-417-11	CARBON	1K	5%	1/4W	
R257	1-247-903-00	CARBON	1M	5%	1/4W	
R258	1-249-417-11	CARBON	1K	5%	1/4W	
R259	1-247-844-11	CARBON	3.6K	5%	1/4W	
R260	1-249-411-11	CARBON	330	5%	1/4W	
R262	1-249-409-11	CARBON	220	5%	1/4W	
R263	1-247-903-00	CARBON	1M	5%	1/4W	
R264	1-247-903-00	CARBON	1M	5%	1/4W	
R265	1-249-423-11	CARBON	3.3K	5%	1/4W	
R266	1-249-417-11	CARBON	1K	5%	1/4W	
R267	1-249-417-11	CARBON	1K	5%	1/4W	
R268	1-249-417-11	CARBON	1K	5%	1/4W	
R269	1-247-903-00	CARBON	1M	5%	1/4W	
R270	1-247-807-31	CARBON	100	5%	1/4W	

< VARIABLE RESISTOR >

RV201	1-223-810-11	RES, VAR, CARBON	10K/10K	(TREBLE)	
RV202	1-223-810-11	RES, VAR, CARBON	10K/10K	(BASS)	
RV204	1-223-811-11	RES, VAR, CARBON	100K/100K	(VOLUME)	
RV221	1-223-816-11	RES, VAR, CARBON	50K	(MIC VOLUME)	(E, AUS, EA, HK, JE, MX, MY, SP)

< SWITCH >

S101	1-554-303-21	SWITCH, TACTILE		(SYSTEM POWER)	
S102	1-554-303-21	SWITCH, TACTILE		(TUNER)	
S103	1-554-303-21	SWITCH, TACTILE		(CD)	
S104	1-554-303-21	SWITCH, TACTILE		(AUX/VIDEO)	
S105	1-554-303-21	SWITCH, TACTILE		(MD/DAT)	
S106	1-554-303-21	SWITCH, TACTILE		(TAPE 2)	
S107	1-554-303-21	SWITCH, TACTILE		(TAPE 1)	
S108	1-554-303-21	SWITCH, TACTILE		(MUTING -20dB)	
S109	1-554-303-21	SWITCH, TACTILE		(SOURCE DIRECT)	
S110	1-554-303-21	SWITCH, TACTILE		(KARAOKE PON)	(E, AUS, EA, HK, JE, MX, MY, SP)

< VIBRATOR >

X101	1-579-125-11	VIBRATOR, CERAMIC		(8MHz)	

****

*	A-4371-980-A	POWER AMPLIFIER BOARD, COMPLETE			(AEP, UK, G, IT, EE, CIS)
*	A-4371-981-A	POWER AMPLIFIER BOARD, COMPLETE			(E, AUS, EA, HK, JE, MX, MY, SP)

****

< CAPACITOR >

C301	1-126-161-11	ELECT	2.2uF	20%	50V
C303	1-162-282-31	CERAMIC	100PF	10%	50V
C304	1-124-910-11	ELECT	47uF	20%	50V
C305	1-124-910-11	ELECT	47uF	20%	50V
C306	1-124-122-11	ELECT	100uF	20%	50V
C307	1-126-233-11	ELECT	22uF	20%	50V
C308	1-126-233-11	ELECT	22uF	20%	50V
C309	1-164-159-11	CERAMIC	0.1uF		50V
C310	1-136-163-00	FILM	0.068uF	5%	50V
C311	1-136-163-00	FILM	0.068uF	5%	50V
C312	1-124-910-11	ELECT	47uF	20%	50V
C331	1-162-306-11	CERAMIC	0.01uF	30%	16V (AEP, UK, G, IT, EE, CIS)

POWER AMPLIFIER | PRIMARY

Ref. No.	Part No.	Description				Remark
C332	1-162-306-11	CERAMIC	0.01uF	30%	16V (AEP, UK, G, IT, EE, CIS)	
C351	1-126-161-11	ELECT	2.2uF	20%	50V	
C353	1-162-282-31	CERAMIC	100PF	10%	50V	
C354	1-124-910-11	ELECT	47uF	20%	50V	
C355	1-124-910-11	ELECT	47uF	20%	50V	
C356	1-124-122-11	ELECT	100uF	20%	50V	
C357	1-126-233-11	ELECT	22uF	20%	50V	
C360	1-136-163-00	FILM	0.068uF	5%	50V	
C361	1-136-163-00	FILM	0.068uF	5%	50V	
		< DIODE >				
D301	8-719-987-63	DIODE 1N4148M				
D351	8-719-987-63	DIODE 1N4148M				
		< IC >				
IC301	8-749-900-24	IC STK-4162MK2 (E, AUS, EA, HK, JE, MX, MY, SP)				
IC301	8-749-920-09	IC STK-4152MK2K (AEP, UK, G, IT, EE, CIS)				
		< COIL >				
L301	1-420-872-00	COIL, AIR-CORE				
L351	1-420-872-00	COIL, AIR-CORE				
		< TRANSISTOR >				
Q301	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA				
Q302	8-729-900-36	TRANSISTOR DTC124ES				
Q303	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q351	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA				
		< RESISTOR >				
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-438-11	CARBON	56K	5%	1/4W	
R303	1-249-415-11	CARBON	680	5%	1/4W	
R304	1-249-438-11	CARBON	56K	5%	1/4W	
R305	1-249-425-11	CARBON	4.7K	5%	1/4W	
R306	1-249-425-11	CARBON	4.7K	5%	1/4W	
R307	1-249-425-11	CARBON	4.7K	5%	1/4W	
R308	1-249-425-11	CARBON	4.7K	5%	1/4W	
⚠R309	1-212-881-11	FUSIBLE	100	5%	1/4W	F
⚠R310	1-217-151-00	METAL PLATE	0.22	10%	1/2W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R312	1-249-431-11	CARBON	15K	5%	1/4W	
R313	1-249-441-11	CARBON	100K	5%	1/4W	
R314	1-249-421-11	CARBON	2.2K	5%	1/4W	
R315	1-249-421-11	CARBON	2.2K	5%	1/4W	
R316	1-249-421-11	CARBON	2.2K	5%	1/4W	
R317	1-249-421-11	CARBON	2.2K	5%	1/4W	
R318	1-247-791-91	CARBON	22	5%	1/4W	
R319	1-247-791-91	CARBON	22	5%	1/4W	
R320	1-247-791-91	CARBON	22	5%	1/4W	
R321	1-247-791-91	CARBON	22	5%	1/4W	
R322	1-249-429-11	CARBON	10K	5%	1/4W	
R323	1-247-881-00	CARBON	120K	5%	1/4W	
R324	1-249-437-11	CARBON	47K	5%	1/4W	
R325	1-249-417-11	CARBON	1K	5%	1/4W	
R326	1-249-439-11	CARBON	68K	5%	1/4W	
R327	1-249-437-11	CARBON	47K	5%	1/4W	
R328	1-249-426-11	CARBON	5.6K	5%	1/4W	
R329	1-247-863-91	CARBON	22K	5%	1/4W	
⚠R330	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R351	1-249-417-11	CARBON	1K	5%	1/4W	
R352	1-249-438-11	CARBON	56K	5%	1/4W	
R353	1-249-415-11	CARBON	680	5%	1/4W	
R354	1-249-438-11	CARBON	56K	5%	1/4W	
R355	1-249-425-11	CARBON	4.7K	5%	1/4W	
R356	1-249-425-11	CARBON	4.7K	5%	1/4W	
R357	1-249-425-11	CARBON	4.7K	5%	1/4W	
R358	1-249-425-11	CARBON	4.7K	5%	1/4W	
⚠R359	1-212-881-11	FUSIBLE	100	5%	1/4W	F
⚠R360	1-217-151-00	METAL PLATE	0.22	10%	1/2W	
R361	1-249-417-11	CARBON	1K	5%	1/4W	
R362	1-249-431-11	CARBON	15K	5%	1/4W	
R363	1-249-441-11	CARBON	100K	5%	1/4W	
R368	1-247-791-91	CARBON	22	5%	1/4W	
R369	1-247-791-91	CARBON	22	5%	1/4W	
R370	1-247-791-91	CARBON	22	5%	1/4W	
R371	1-247-791-91	CARBON	22	5%	1/4W	
**********						
*	1-654-762-11	PRIMARY BOARD				
		**********				
	1-533-293-11	FUSE HOLDER				
		< CONNECTOR >				
CN900	1-564-321-00	PIN, CONNECTOR 2P				
		< FUSE >				
⚠F901	1-532-285-00	FUSE (1.25A/250V)				
⚠F902	1-532-286-00	FUSE (2.5A/250V) (E, AUS, EA, HK, JE, MX, MY, SP)				
		< SWITCH >				
⚠S901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (E, AUS, EA, HK, JE, MX, MY, SP)				
**********						

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECONDARY SPEAKER

Ref. No.	Part No.	Description	Remark
*	1-654-763-11	SECONDARY BOARD	
		**********	
	1-533-293-11	FUSE HOLDER	
		< CONNECTOR >	
CN901	1-691-768-11	PLUG (MICRO CONNECTOR) 6P	
* CN902	1-564-506-11	PLUG, CONNECTOR 3P	
		< FUSE >	
⚠F903	1-532-203-00	FUSE (2A/250V)	
⚠F904	1-532-203-00	FUSE (2A/250V)	
**********			
*	1-654-761-11	SPEAKER BOARD	
		**********	
		< CAPACITOR >	
C401	1-136-165-00	FILM 0.1uF 5% 50V	(AEP, UK, G, IT, EE, CIS)
C402	1-136-165-00	FILM 0.1uF 5% 50V	(AEP, UK, G, IT, EE, CIS)
C451	1-136-165-00	FILM 0.1uF 5% 50V	(AEP, UK, G, IT, EE, CIS)
C452	1-136-165-00	FILM 0.1uF 5% 50V	(AEP, UK, G, IT, EE, CIS)
		< CONNECTOR >	
* CN401	1-564-519-11	PLUG, CONNECTOR 4P	
		< RESISTOR >	
R401	1-249-393-11	CARBON 10 5% 1/4W	(AEP, UK, G, IT, EE, CIS)
R402	1-249-393-11	CARBON 10 5% 1/4W	(AEP, UK, G, IT, EE, CIS)
R451	1-249-393-11	CARBON 10 5% 1/4W	(AEP, UK, G, IT, EE, CIS)
R452	1-249-393-11	CARBON 10 5% 1/4W	(AEP, UK, G, IT, EE, CIS)
		< TERMINAL >	
TB401	1-537-822-11	TERMINAL BOARD (SP) (SPEAKER)	
**********			
		MISCELLANEOUS	
		**********	
* 9	1-769-784-11	WIRE (FLAT TYPE) (23 CORE)	
⚠63	1-574-902-11	CORD, POWER (E, JE, MX)	
⚠63	1-575-651-11	CORD, POWER	(AEP, G, IT, EA, EE, HK, MY, SP, CIS)
⚠63	1-690-608-11	CORD, POWER (AUS)	
⚠63	1-696-570-21	CORD, POWER (UK)	
⚠64	1-569-007-11	ADAPTER, CONVERSION 2P (E, JE)	
⚠64	1-569-008-11	ADAPTER, CONVERSION 2P (EA, HK, MY, SP)	
⚠64	1-770-019-11	ADAPTOR, CONVERSION (HK)	
⚠T901	1-427-700-11	TRANSFORMER, POWER	(E, AUS, EA, HK, JE, MX, MY, SP)
⚠T901	1-427-701-11	TRANSFORMER, POWER (AEP, UK, G, IT, EE, CIS)	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3×8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3×6 (S)	
#3	7-685-650-79	SCREW +BVTP 3×16 TYPE2 IT-3	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-960-075-11

Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

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Quality Engineering Dept.

SS-EX90G

SERVICE MANUAL

E Model
Australian Model
Tourist Model

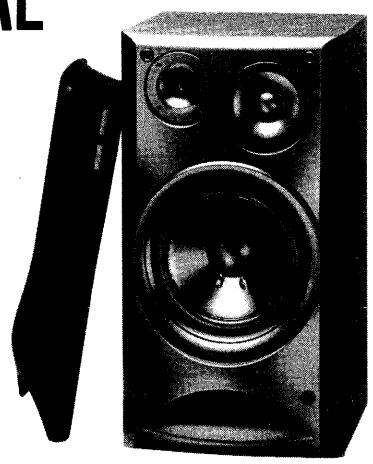


Photo : L-ch

This set is the speaker system in MHC-EX5/EX9AV.

SPECIFICATIONS

Speaker system	: 3way system
Speaker units	: Woofer : 17cm dia., cone type
	Tweeter : 2.5cm dia., cone type
	Super tweeter : 2cm dia., dome type
Enclosure	: Bass reflex
Rated impedance	: 6ohms
Dimensions	: Approx. 220 x 410 x 270 mm
	($8^3/_4$ x $16^1/_4$ x $10^3/_4$ inches)
Weight	: Approx. 5.3kg

Design and specification subject to change without notice.

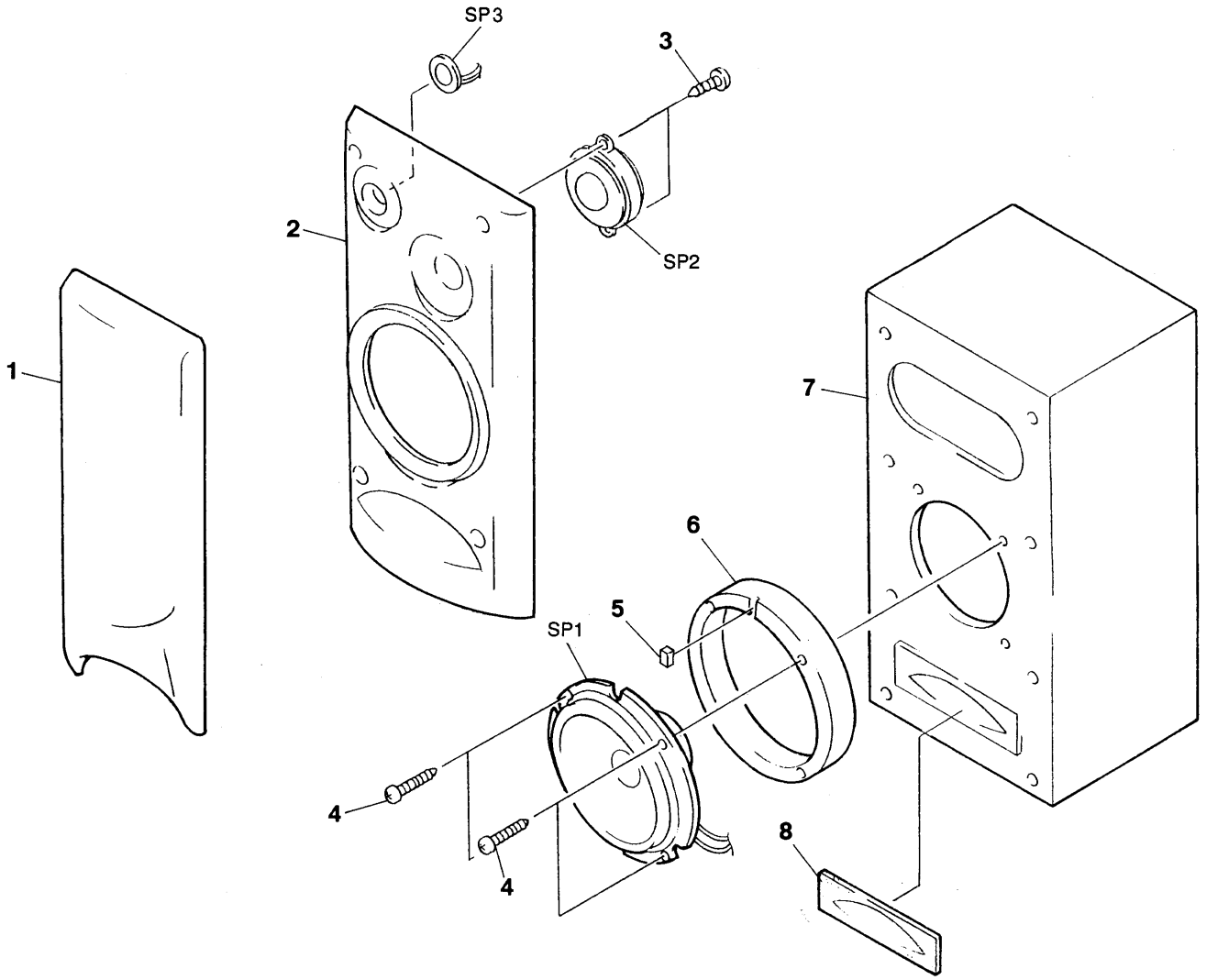
SPEAKER SYSTEM

SONY®

EXPLODED VIEW AND PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



Ref.No.	Part No.	Description	Remark
1	X-4945-593-1	FRAME ASSY, GRILLE	
2	X-4945-592-1	PANEL (L) ASSY, FRONT	
2	X-4945-594-1	PANEL (R) ASSY, FRONT	
3	7-685-661-79	SCREW +P 4X12 TYPE2 NON-SLIT	
4	7-621-849-50	SCREW, WOOD +R 4.1X40	
5	9-911-844-XX	PACKING	
6	4-971-551-01	RING, WOOFER	
* 7	A-4361-347-A	CABINET ASSY, SPEAKER	
8	4-971-552-01	CUSHION	
SP1	1-504-760-11	SPEAKER (17CM) (WOOFER)	
SP2	1-504-745-11	SPEAKER (2.5CM) (TWEETER)	
SP3	1-504-435-11	SPEAKER (2CM) (SUPER TWEETER)	

Ref.No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-769-317-11	CORD, SPEAKER	
*	4-975-548-01	CUSHION	

9-960-221-11

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Consumer A&V Products Company
Home A&V Products Div.

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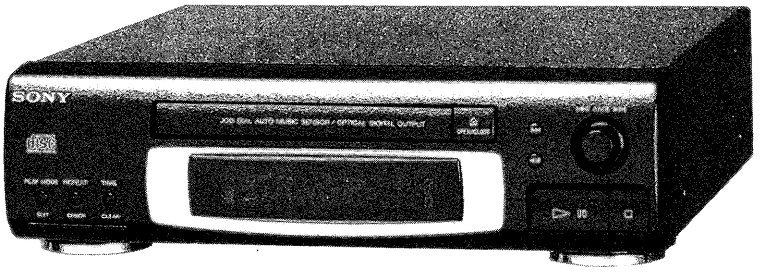
Quality Engineering Dept.

CDP-EX10

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model



This set is the CD player section in
MHC-EX5/EX7/EX9AV/EX10AV.

Model Name Using Similer Mechanism	NEW
CD Transport Mechanism Type	CDM28-5BD19
Base Unit Type	BU-5BD19
Optical Pick-Up Type	KSS-213B

SPECIFICATIONS

System — Compact disc digital audio system
Laser — Semiconductor laser
Wavelength — 780 – 790 nm
Frequence response — 20 Hz – 20 kHz (±0.5 dB)
Signal-to-noise ratio — More than 105 dB
Dynamic range — More than 95 dB
Outputs
- CD OUT (phono jacks):
  - Output level 2 V (at 50 kilohms)
  - Load impedance over 10 kilohms
- CD DIGITAL OPTICAL OUT (Square optical connector jack, rear panel):
  - wave length 660 nm
  - output level –18 dBm

Dimensions
- Approx. 280 x 85 x 285 mm (w/h/d) (11 1/8 x 3 3/8 x 11 1/4 inches)

Mass — Approx. 2.0 kg (4 lb 7 oz)

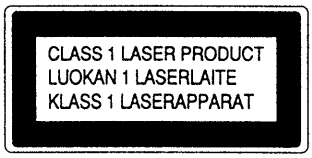
Design and specifications are subject to change without notice.

COMPACT DISC PLAYER

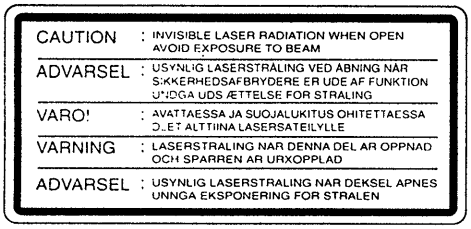
SONY®

使用時は添付資料も参照のこと
Refer to the additional documents.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This Compact Disc player is classfied as a CLASS 1 LASER product.
The CLASS 1 LASER product label is located on the rear exterior.


CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSATEILYLLE
VARNING : LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD
ADVARSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN

This caution label is located inside the unit.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor ofthe circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SERVICING NOTE

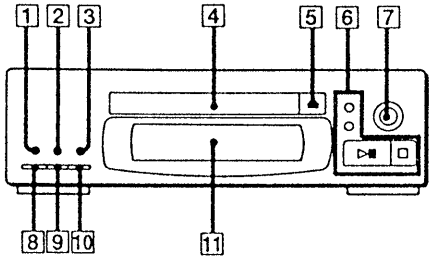
• POWER SUPPLIED WHILE SERVICING

This unit does not work independently because of not having the power supply.
It must be unite together with the other units when repaired.

SECTION 1
GENERAL

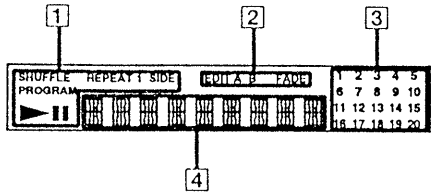
This section is extracted from instruction manual.

Front Panel



1 PLAY MODE button (8, 17)
2 REPEAT button (9)
3 TIME button (7)
4 Disc tray (7)
5 ⏏ OPEN/CLOSE button (open/close of the disc tray) (7, 15)
6 CD player operating buttons
◀◀ / ▶▶ (manual search) (8)
▷II (play/pause) (7, 16)
□ (stop) (7, 15)
7 I◀◀ AMS ▶▶I control (7, 17)
8 EDIT button (16, 17)
9 CHECK button (8, 17)
10 CLEAR button (8)
11 Display window (7, 16, 17)

Display Window



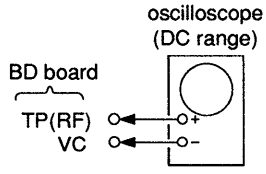
1 CD play mode indication (7)
2 CD edit mode indication (16)
3 Music calendar (7, 16)
4 Step/track number/playing time indication (7, 9, 16)

SECTION 2
ELECTRICAL ADJUSTMENTS

Note :

1. Basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.
5. Adjust the focus bias adjustment when optical block is replaced.

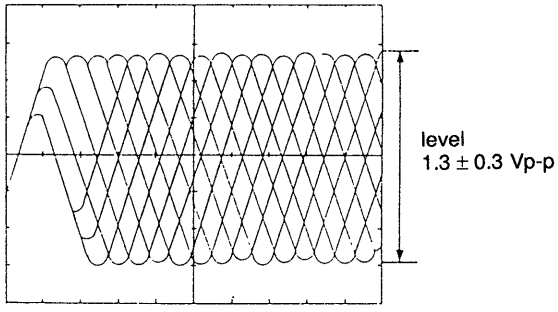
Focus Bias Adjustment



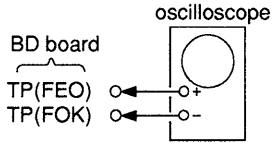
Procedure:

1. Connect oscilloscope to test point TP (RF). (GND terminal : VC)
2. Turned Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Adjust RV101 so that the waveform is clear.
   (Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.)
5. After adjustment, check the RF signal level.

• RF signal
VOLT/DIV : 200 mV
TIME/DIV : 500 nS



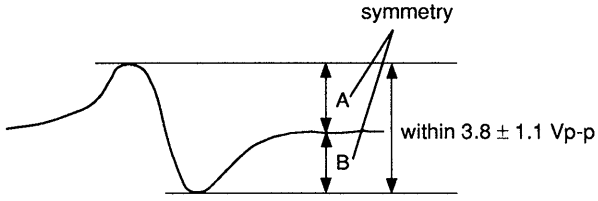
S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FEO).
2. Connect between test point TP (FOK) and GND by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.8±1.1 Vp-p.

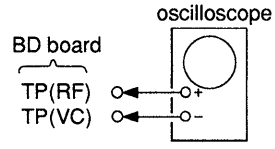
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check



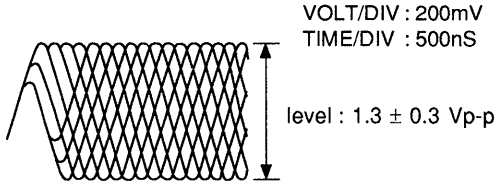
Procedure :

1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

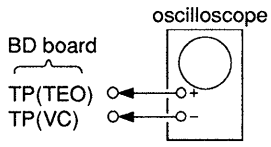
Note :

Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform



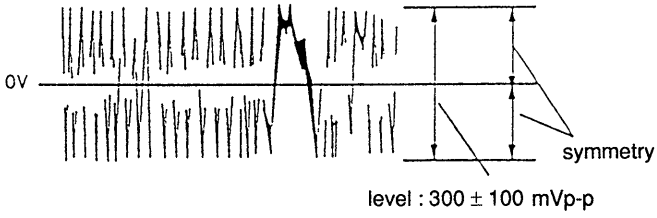
E-F Balance Check



Procedure :

1. Connect oscilloscpe to test point TP (TEO).
2. Turned Power switch on.
3. Connect pin ㉔ of IC601 on the PANEL board to GND with a lead wire.
4. Put disc (YEDS-18) in and playback.
5. Push TIME button.
6. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0Vdc, and check this level.

Traverse waveform



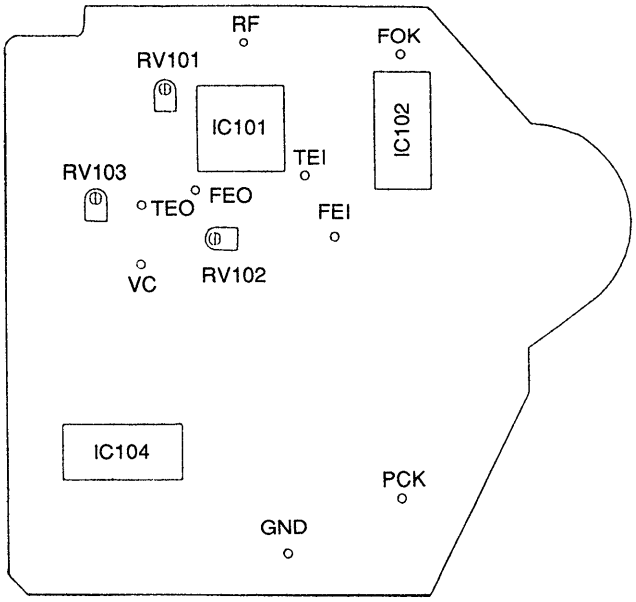
7. Remove the lead wire connected in step 1.

Focus/Tracking Gain Adjustment (RV102, RV103)

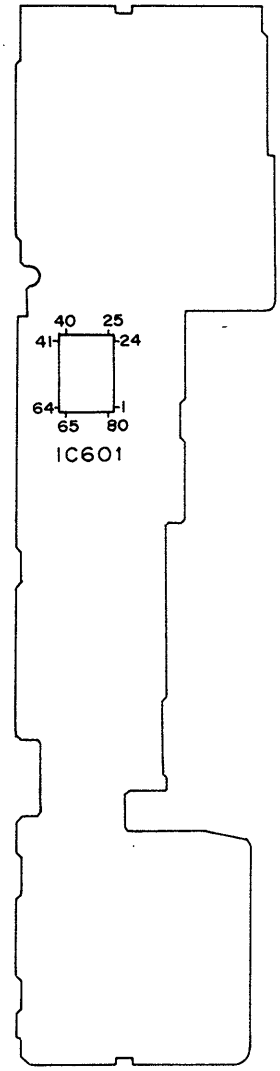
This gain has a margin, so even if it is slightly off.
There is no problem.
Therfore, do not perform this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Location :

[BD BOARD] (Conductor Side)



[PANEL BOARD] (Conductor Side)



SECTION 3
DIAGRAMS

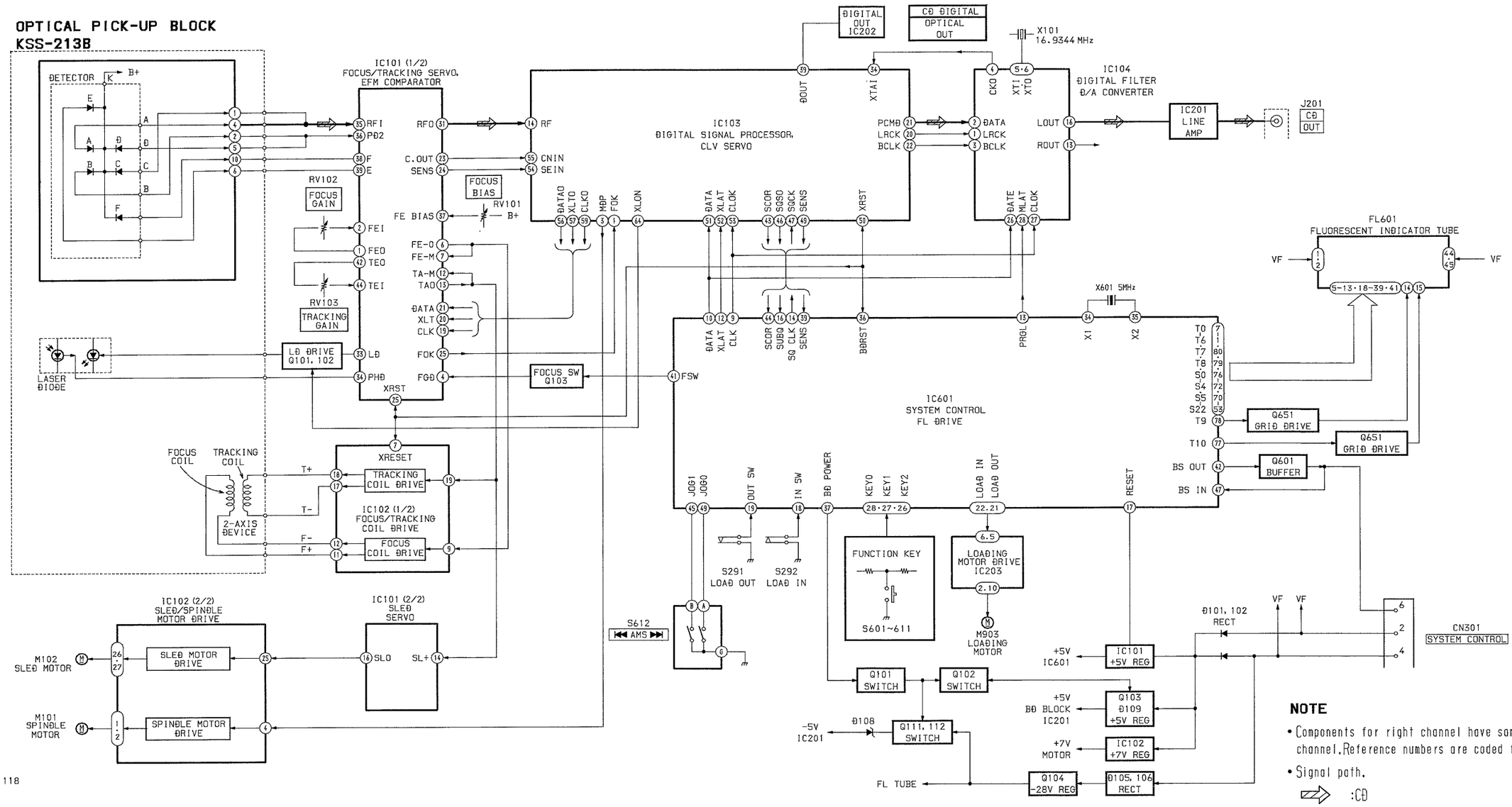
3-1. IC PIN FUNCTIONS

- **IC601 SYSTEM CONTROL, FL DRIVER (μPD78044AGF)**

Pin No.	Pin Name	I/O	Function
1	T6	O	FL display grid output
2	T5	O	
3	T4	O	
4	T3	O	
5	T2	O	
6	T1	O	
7	T0	O	
8	VDD	–	+5V power supply
9	CLK	O	Serial clock output to DSP (CXD-2507AQ)
10	DATA	O	Serial data output to DSP (CXD-2507AQ)
11	———	–	Fixed at GND
12	XLAT	O	Serial data latch pulse output to DSP (CXD-2507AQ)
13	PRGL	O	Serial data latch pulse output to D/F DAC (PCM-1710U)
14	SQCLK	O	Subcode Q data read clock output to DSP (CXD-2507AQ)
15	———	–	Not used (open)
16	SUBQ	I	Subcode Q data input from DSP (CXD-2507AQ)
17	RESET	I	System reset input ("L"=Active)
18	INSW	I	S292 (loading-in switch) input
19	OUTSW	I	S291 (loading-out switch) input
20	AVss	–	GND
21	LDOUT	O	Output for rotating M903 (loading motor) in the loading-out direction
22	LDIN	O	Output for rotating M903 (loading motor) in the loading-in direction
23	ADJ	I	Test mode input. "L"=Stops GFS check.
24	AFADJ	I	Test mode input. Fixed at "H" ("L":Test mode)
25	MODE	I	Not used (Fixed at "H")
26	KEY2	I	Key AD input
27	KEY1	I	
28	KEY0	I	
29	AVDD	–	+5V power supply
30	AVREF	–	
31	———	–	Fixed at GND
32	———	–	Not used (open)
33	Vss	–	GND
34	X1	I	Clock (4MHz)
35	X2	O	
36	BDRST	O	BD reset output
37	BDPOWER	O	BD power ON/OFF output
38	———	–	Not used (open)
39	SENS	I	SENS input from DSP (CXD-2507AQ)
40	AMUTE	O	Muting ON/OFF output

Pin No.	Pin Name	I/O	Function
41	FSW	O	
42	BSOUT	O	Audio bus output
43	———	–	Not used (open)
44	SCOR	I	Subcode sync S0+S1 detection input
45	JOG1	I	JOG input
46	———	–	Not used (open)
47	BSIN	I	Audio bus input
48	IC (VPP)	–	Connect to GND
49	JOG0	I	JOG input
50	———	–	Not used (open)
51	———	–	
52	V_{DD}	–	+5V power supply
53	S22	O	FL display segment output
54	S21	O	
55	S20	O	
56	S19	O	
57	S18	O	
58	S17	O	
59	S16	O	
60	S15	O	
61	S14	O	
62	S13	O	
63	S12	O	
64	S11	O	
65	S10	O	
66	S9	O	
67	S8	O	
68	S7	O	
69	S6	O	
70	S5	O	
71	VLOAD	–	–28V power supply for driving FL display
72	S4	O	FL display segment output
73	S3	O	
74	S2	O	
75	S1	O	
76	S0	O	
77	T10	O	FL display grid output
78	T9	O	
79	T8	O	
80	T7	O	

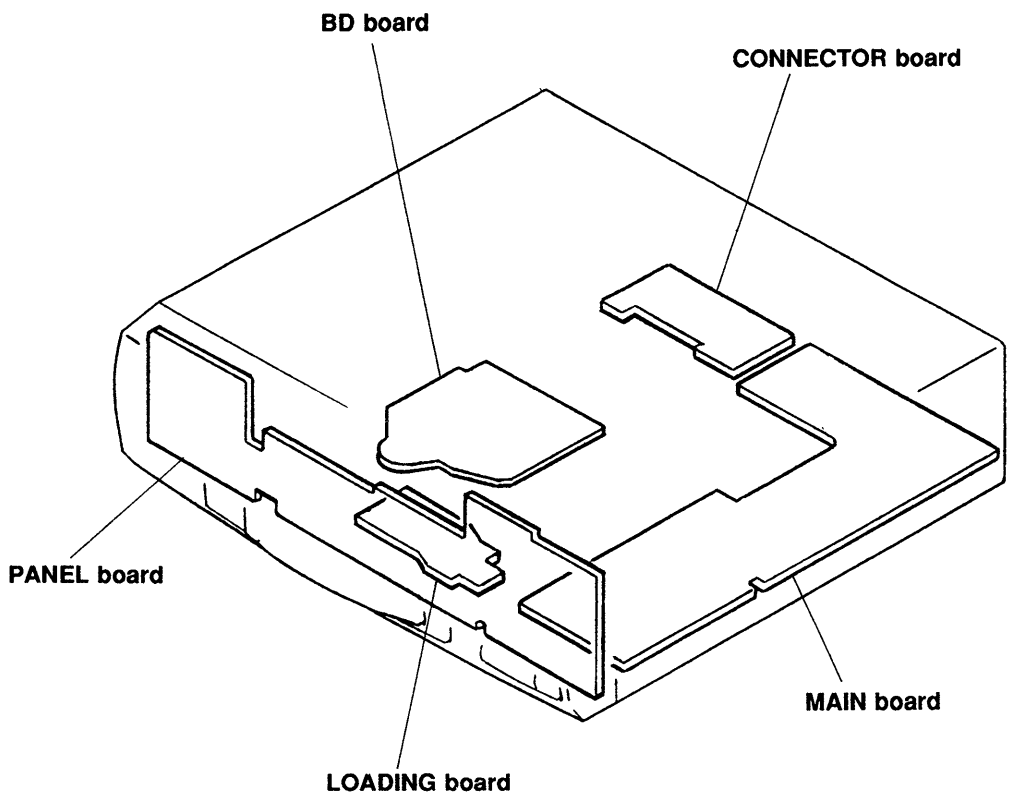
3-2. BLOCK DIAGRAM



NOTE

- Components for right channel have same values as for left channel. Reference numbers are coded from
- Signal path.
  ⇨ :CD

3-3. CIRCUIT BOARDS LOCATION



3-4. PRINTED WIRING BOARD — MAIN SECTION —

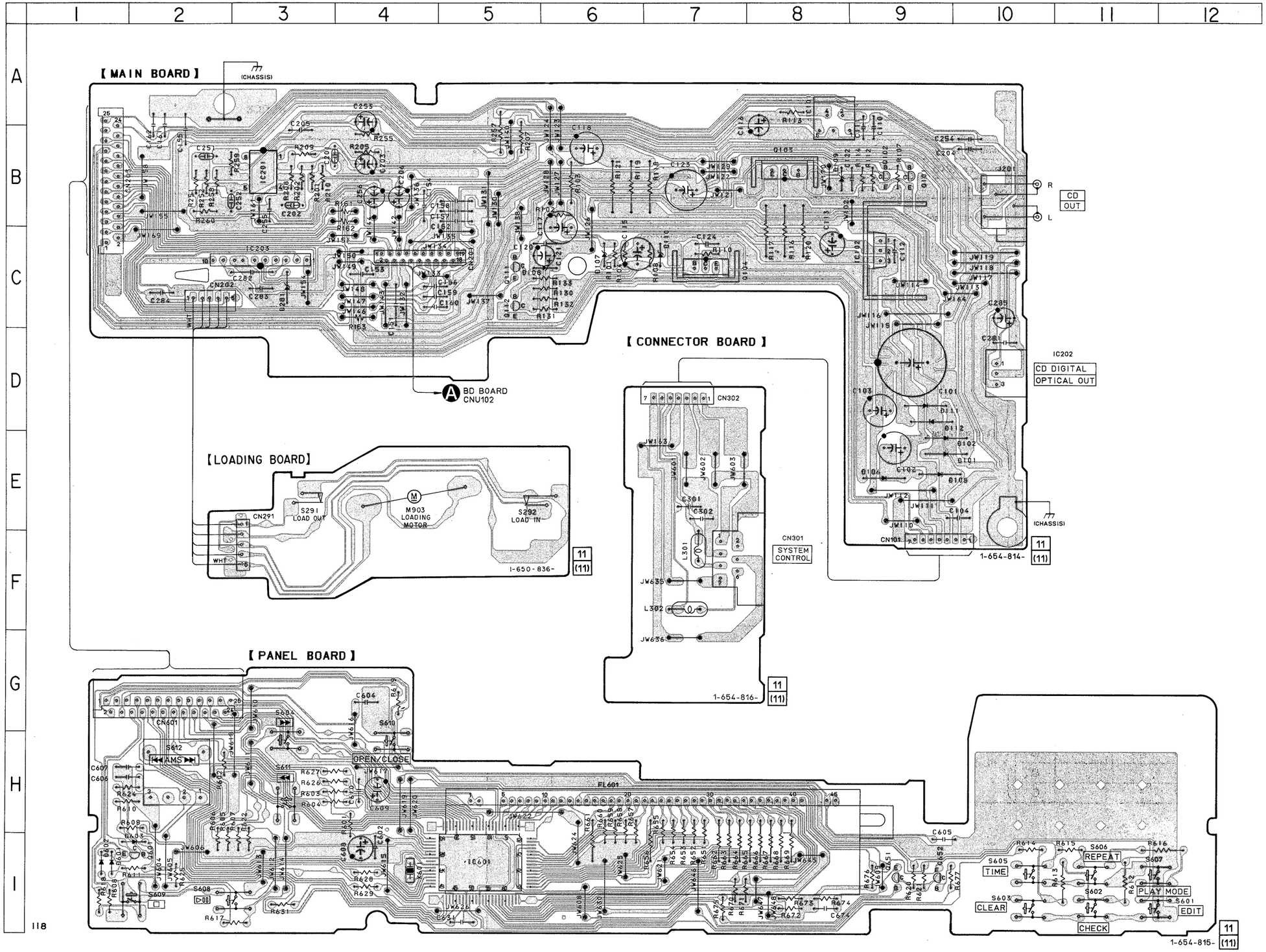
• See page 19 for Semiconductor Lead Layouts.

Note:

- ○—— : parts extracted from the component side.
- ▭ : Pattern on the side which is seen.

• **Semiconductor Location**

Ref. No.	Location
D101	E-9
D102	E-9
D105	E-9
D106	E-9
D107	C-6
D108	C-6
D109	B-8
D110	C-7
D111	D-9
D112	D-9
D281	C-3
D601	I-1
D602	I-1
D603	I-2
IC101	A-8
IC102	C-9
IC201	B-3
IC202	D-10
IC203	C-3
IC601	I-5
Q101	B-10
Q102	B-9
Q103	B-8
Q104	C-7
Q111	C-5
Q112	C-5
Q601	I-2
Q651	I-9
Q652	I-9

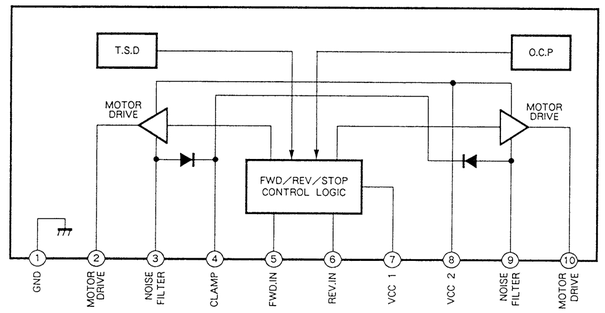


3-5. SCHEMATIC DIAGRAM — MAIN SECTION —

• See page 6 for IC Pin Functions. (IC601)

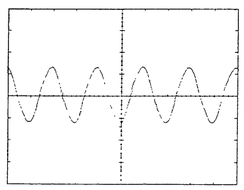
• IC Block Diagrams

IC203 LB1641



• Waveform

⑩ IC601 ㉞ pin 5.36Vp-p 5MHz



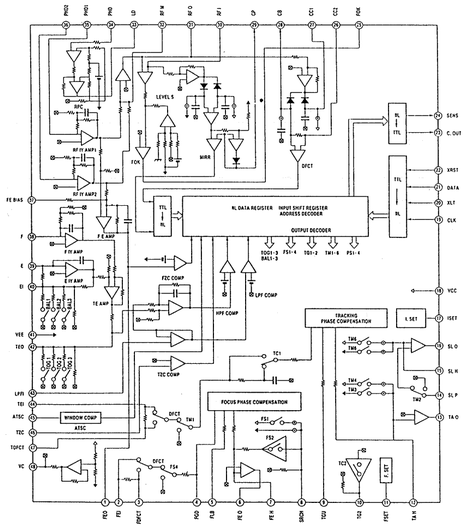
NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- B+ : B+ Line.
- B− : B− Line.
- Voltages and waveforms are dc with respect to ground under no-signal (deturned) conditions. no mark: PLAY
- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

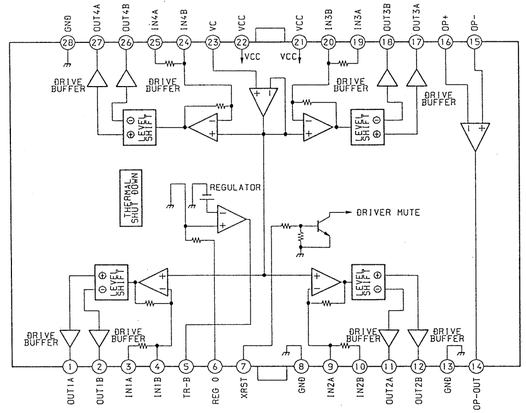
⇨ : CD

CDP-EX10 • IC Block Diagrams

IC101 CXA1782BQ

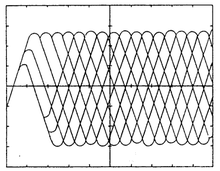


IC102 BA6397FP

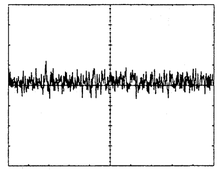


• Waveforms

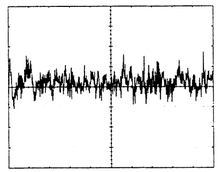
❶ IC101 ㉛ pin 1.4Vp-p



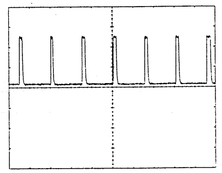
❷ IC101 ㊹ pin 8mVp-p 0.2ms/DIV



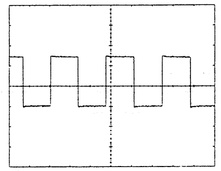
❸ IC101 ② pin 20mVp-p 2ms/DIV



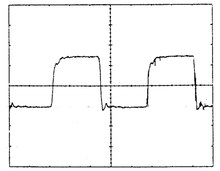
❹ IC103 ③ pin 2.4Vp-p 7.5µsec



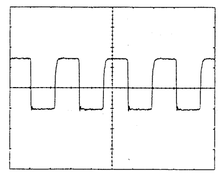
❺ IC103 ㉘ pin 5.1mVp-p 137µsec



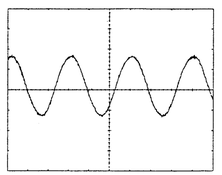
❻ IC103 ㉕ pin 5.1Vp-p 232.7sec



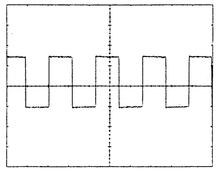
❼ IC103 ㉒ pin 5.1Vp-p 472.7nsec



❾ IC104 ⑤ pin 3Vp-p 16.9344MHz



❽ IC103 ㉙ pin 5.1Vp-p 23µsec

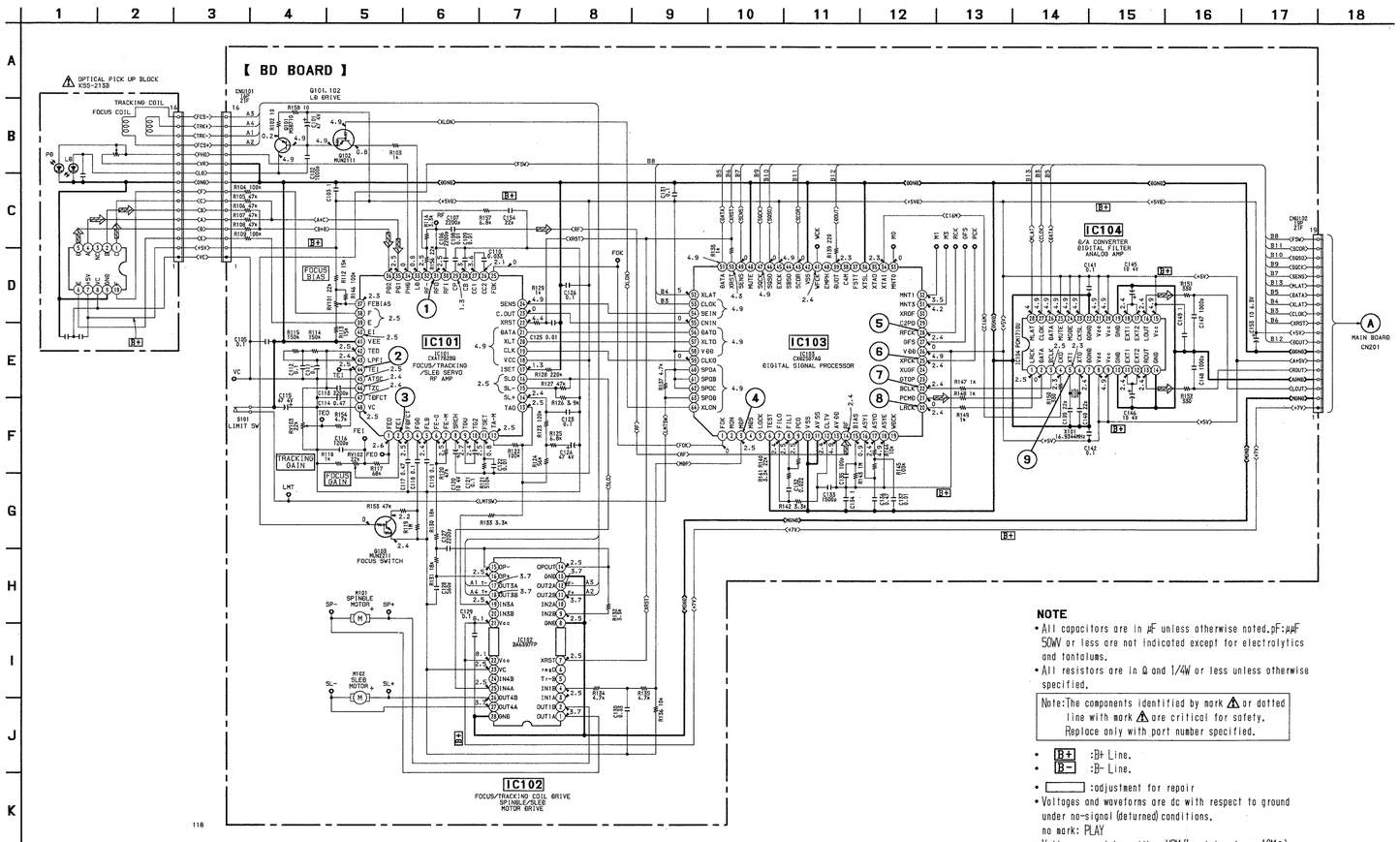


Note:
- ⊕ : Through hole.
- ▒▒ : Pattern on the side which is seen. (The other layer's patterns are not indicated.)

• Semiconductor Location

Ref. No.	Location
IC101	H-3
IC102	H-4
IC103	C-3
IC104	J-2
Q101	E-3
Q102	G-3
Q103	E-2

3-6. SCHEMATIC DIAGRAM — BD SECTION —



NOTE

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.

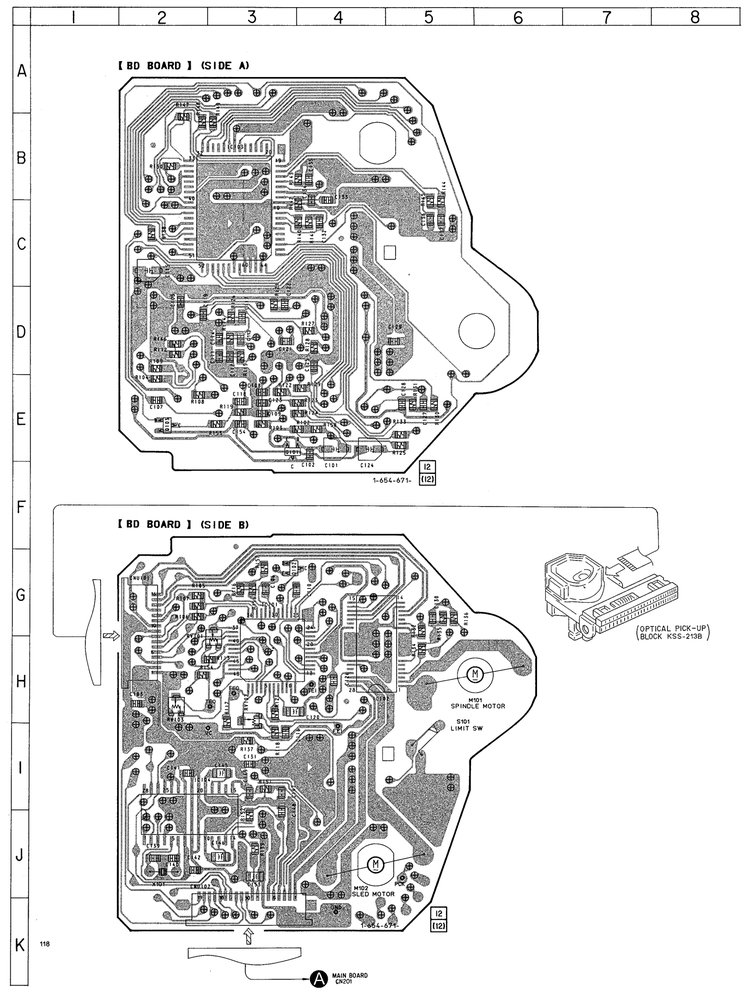
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- B+ : B+ Line.
- B− : B− Line.
- ▭ : adjustment for repair
- Voltages and waveforms are dc with respect to ground under no-signal (deturned) conditions. no mark: PLAY
- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

⇨ : CD

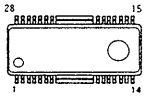
3-7. PRINTED WIRING BOARD — BD SECTION —

• See page 10 for Circuit Boards Location.
• See page 19 for Semiconductor Lead Layouts.

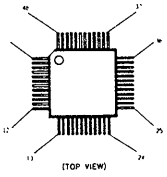


3-8. SEMICONDUCTOR LEAD LAYOUTS

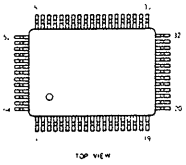
BA6397FP



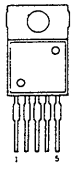
CXA1782BQ



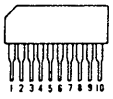
CXD2507AQ



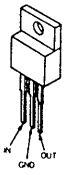
L78MR05



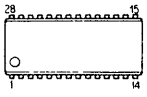
LB1641



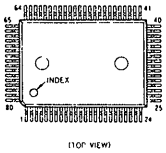
M5F7807



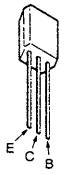
PCM1710U-B



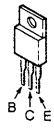
μPD78044AGF-091-3B9



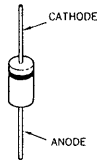
DTA114ES
DTC114ES
2SC2603-EF



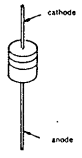
2SB1094-LK
2SD2012



RD3.6ES-B1
RD3.9ES-B1
RD5.1ES-B2
RD5.6ES-B2
RD30ES-B2



1N4148M
10E2

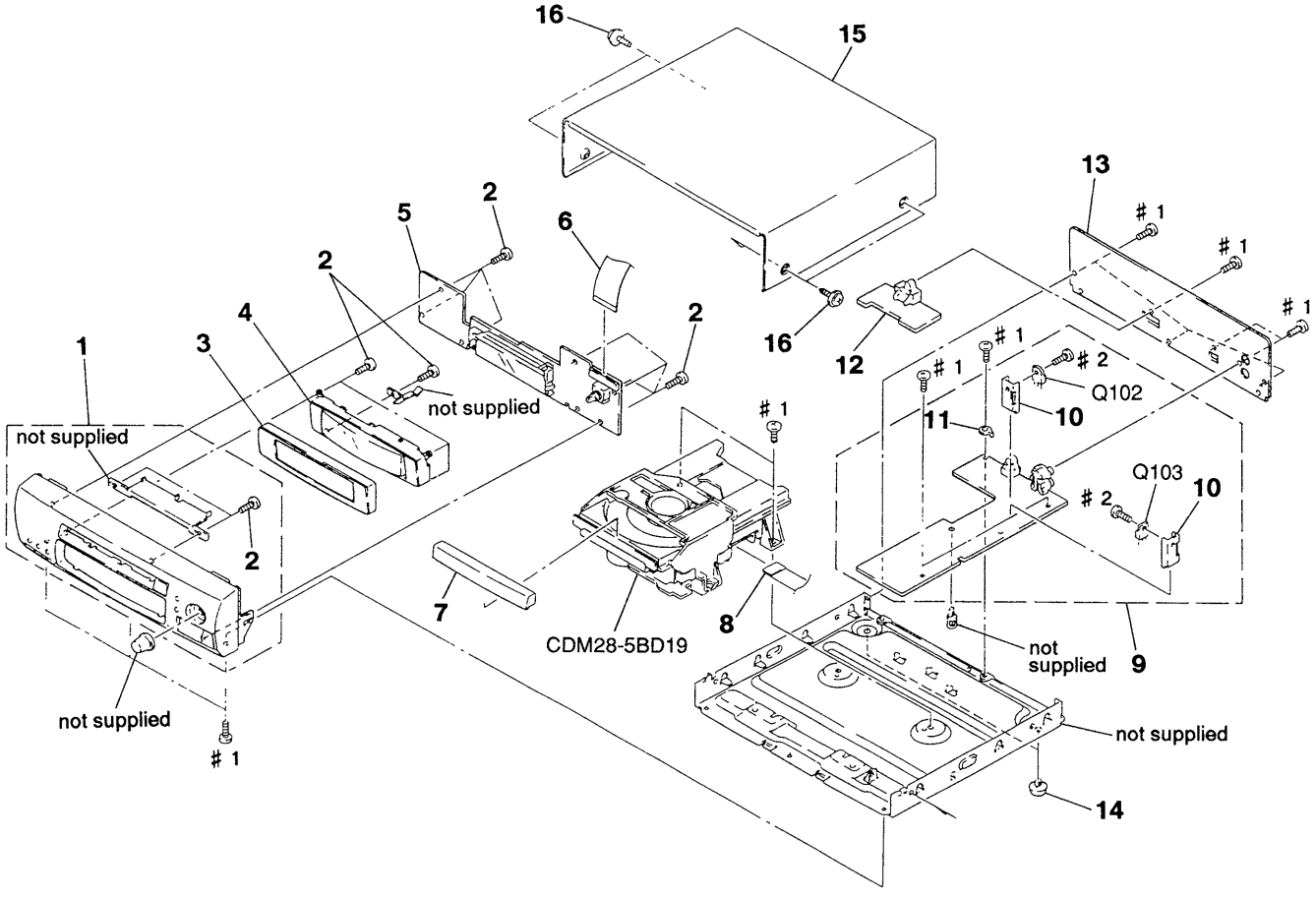


SECTION 4
EXPLODED VIEWS

NOTE:
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

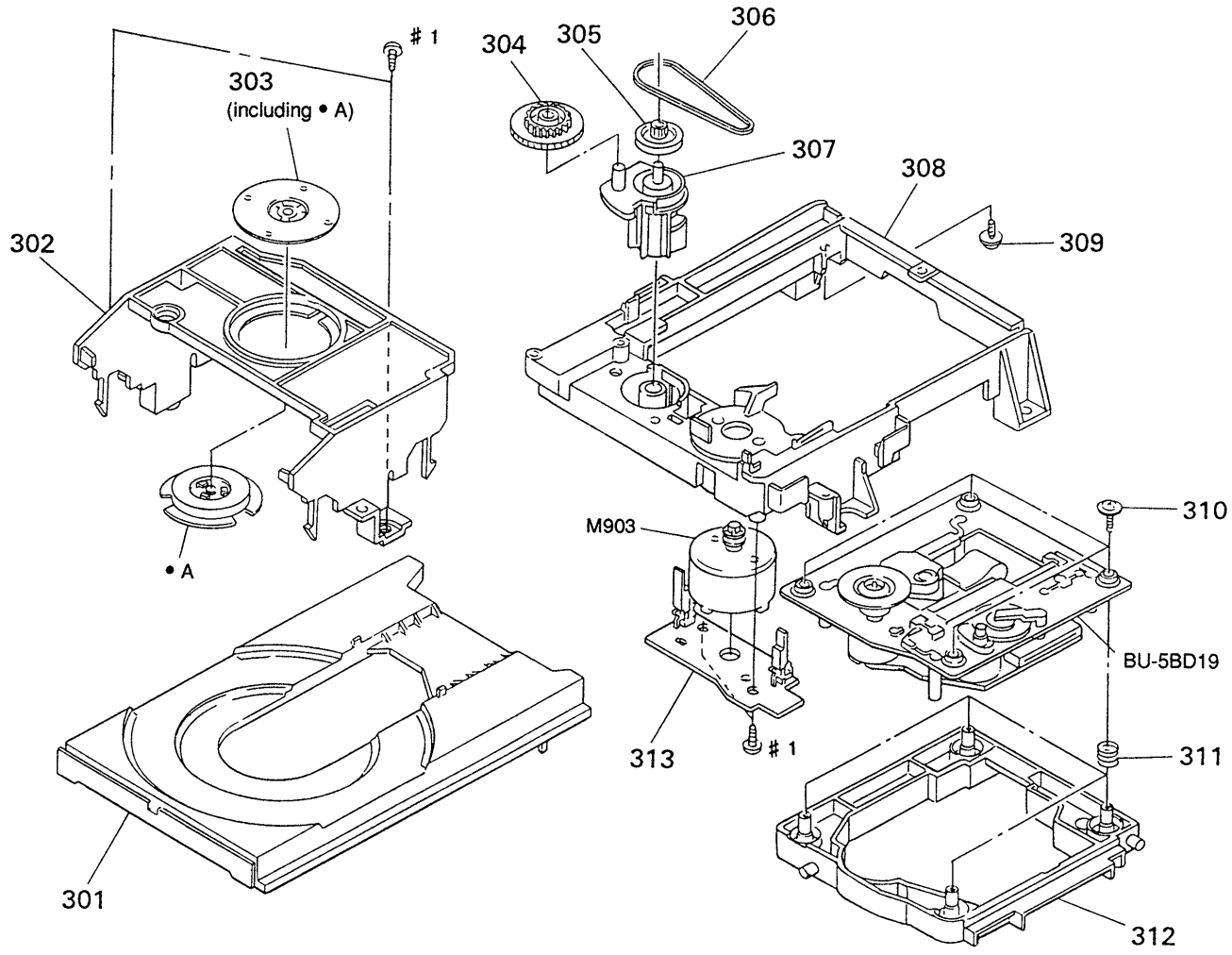
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

4-1. CHASSIS SECTION



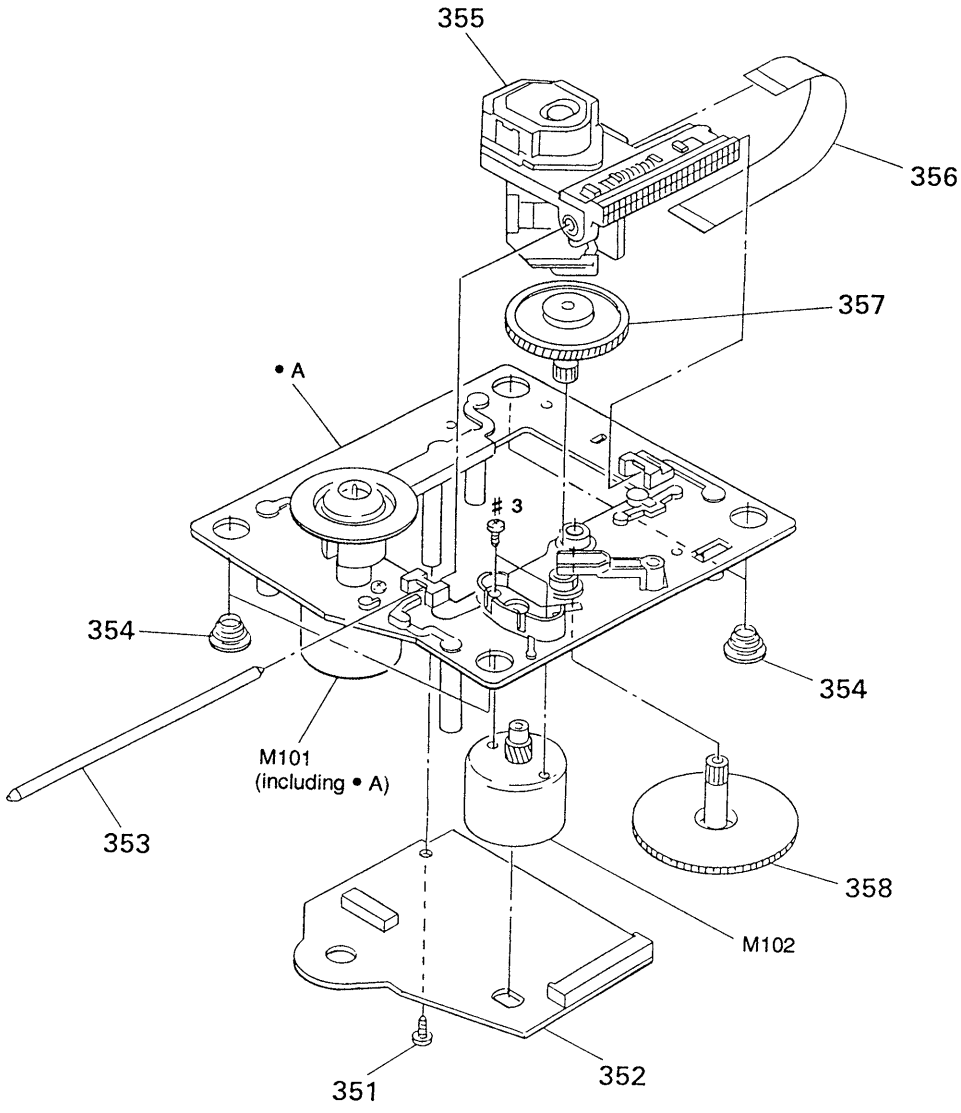
Ref.No.	Part No.	Description	Remark
1	X-4945-433-1	PANEL ASSY, FRONT	
2	4-951-620-01	SCREW (2.6X8), +BVTP	
3	4-970-932-01	PLATE (ST/CD), ORNAMENTAL	
4	4-970-931-01	WINDOW (FL)	
* 5	A-4673-377-A	PANEL BOARD, COMPLETE	
6	1-769-620-11	WIRE (FLAT TYPE) (25 CORE)	
7	4-970-934-01	PANEL (LOADING)	
8	1-769-621-11	WIRE (FLAT TYPE) (19 CORE)	
* 9	A-4673-376-A	MAIN BOARD, COMPLETE	
* 10	3-309-144-21	HEAT SINK	
* 11	4-870-539-00	PLATE, GROUND	
* 12	1-654-816-11	CONNECTOR BOARD	
* 13	4-970-937-01	PANEL, BACK	
14	4-965-822-01	FOOT	
15	4-970-927-21	CASE	
16	3-363-099-01	SCREW (CASE 3 TP2)	
Q102	8-729-900-80	TRANSISTOR DTC114ES	
Q103	8-729-209-15	TRANSISTOR 2SD2012	

4-2. CD MECHANISM SECTION (CDM28-5BD19)



Ref. No.	Part No.	Description	Remark
* 301	4-960-836-01	TABLE, DISC	
* 302	4-960-835-01	HOLDER (M)	
303	1-452-719-11	MAGNET ASSY	
304	4-960-842-01	GEAR (P)	
305	4-960-841-01	PULLEY (S)	
306	4-927-649-01	BELT	
* 307	4-960-839-01	CAM	
* 308	4-960-838-03	BASE (MD)	
* 309	4-917-583-21	BRACKET, YOKE	
310	4-933-134-01	SCREW (+PTPWH M2.6X6)	
311	4-959-996-01	SPRING (932), COMPRESSION	
* 312	4-960-834-01	HOLDER (BU)	
* 313	1-650-836-11	LOADING BOARD	
M903	A-4604-363-A	MOTOR (L) ASSY (LOADING)	

4-3. OPTICAL PICK-UP BLOCK SECTION (BU-5BD19)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
351	4-951-620-01	SCREW (2.6X8), +BVTP	
* 352	A-4673-402-A	BD BOARD, COMPLETE	
353	4-917-565-01	SHAFT, SLED	
354	4-951-940-01	INSULATOR (BU)	
⚠355	8-848-367-11	DEVICE, OPTICAL KSS-213B/K-N	
356	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
357	4-917-567-01	GEAR (M)	
358	4-917-564-01	GEAR (P), FLATNESS	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	

SECTION 5
ELECTRICAL PARTS LIST

BD

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.

- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref.No.	Part No.	Description			Remark
*	A-4673-402-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-126-607-11	ELECT CHIP	47uF	20%	4V
C102	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C103	1-164-346-11	CERAMIC CHIP	1uF		16V
C105	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C106	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C107	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C108	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C109	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C112	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C113	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C114	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C117	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C118	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C119	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C120	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C121	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C122	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C123	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C124	1-126-607-11	ELECT CHIP	47uF	20%	4V
C125	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C126	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C127	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C128	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C129	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C130	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C131	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C132	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C133	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C134	1-164-346-11	CERAMIC CHIP	1uF		16V
C135	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C136	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C137	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C139	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C140	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C141	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C142	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C145	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C146	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C147	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C148	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C149	1-164-346-11	CERAMIC CHIP	1uF		16V
C153	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C154	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
		< CONNECTOR >			
CNU101	1-770-014-11	CONNECTOR, FFC/FPC 16P			
CNU102	1-770-013-11	CONNECTOR, FFC/FPC 19P			
		< IC >			
IC101	8-752-069-56	IC CXA1782BQ-T6			
IC102	8-759-291-06	IC BA6397FP-T1			
IC103	8-752-372-94	IC CXD2507AQ			
IC104	8-759-185-29	IC PCM1710U-BT1			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-RT1			
Q102	8-729-424-08	TRANSISTOR UN2111			
Q103	8-729-421-22	TRANSISTOR UN2211			
		< RESISTOR >			
R102	1-216-001-00	METAL CHIP	10	5%	1/10W
R103	1-216-049-00	METAL CHIP	1K	5%	1/10W
R104	1-216-097-00	METAL CHIP	100K	5%	1/10W
R105	1-216-089-00	METAL CHIP	47K	5%	1/10W
R106	1-216-089-00	METAL CHIP	47K	5%	1/10W
R107	1-216-089-00	METAL CHIP	47K	5%	1/10W
R108	1-216-089-00	METAL CHIP	47K	5%	1/10W
R109	1-216-097-00	METAL CHIP	100K	5%	1/10W
R112	1-216-077-00	METAL CHIP	15K	5%	1/10W
R113	1-216-077-00	METAL CHIP	15K	5%	1/10W
R114	1-216-101-00	METAL CHIP	150K	5%	1/10W
R115	1-216-101-00	METAL CHIP	150K	5%	1/10W
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R117	1-216-093-00	METAL CHIP	68K	5%	1/10W
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W
R119	1-216-121-00	METAL CHIP	1M	5%	1/10W
R120	1-216-089-00	METAL CHIP	47K	5%	1/10W

BD CONNECTOR LOADING MAIN

Ref.No.	Part No.	Description				Remark
R121	1-216-114-00	METAL GLAZE	510K	5%	1/10W	
R122	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R124	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R125	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R126	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R127	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R128	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R129	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R130	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R131	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R134	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R135	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R137	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R138	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R139	1-216-033-00	METAL CHIP	220	5%	1/10W	
R140	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R141	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R142	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R143	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R144	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R145	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R146	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R147	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R148	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R149	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R150	1-216-037-00	METAL CHIP	330	5%	1/10W	
R151	1-216-037-00	METAL CHIP	330	5%	1/10W	
R152	1-216-037-00	METAL CHIP	330	5%	1/10W	
R153	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R154	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R157	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R158	1-216-001-00	METAL CHIP	10	5%	1/10W	
		< VARIABLE RESISTOR >				
RV101	1-241-396-11	RES, ADJ, METAL GLAZE 22K				
RV102	1-241-396-11	RES, ADJ, METAL GLAZE 22K				
RV103	1-241-396-11	RES, ADJ, METAL GLAZE 22K				
		< SWITCH >				
S101	1-572-085-11	SWITCH, LEAF (LIMIT SW)				
		< VIBRATOR >				
X101	1-579-280-11	VIBRATOR, CRYSTAL (16.9344MHz)				

****

Ref.No.	Part No.	Description				Remark
*	1-654-816-11	CONNECTOR BOARD				
		**********				
		< CAPACITOR >				
C301	1-162-282-31	CERAMIC	100PF	10%	50V	
C302	1-164-159-11	CERAMIC	0.1uF		50V	
		< CONNECTOR >				
CN301	1-770-158-11	SOCKET, CONNECTOR 7P				
CN302	1-770-031-11	CONNECTOR, BOARD TO BOARD 7P				
		< COIL >				
L301	1-410-464-11	INDUCTOR	3.3uH			
L302	1-410-464-11	INDUCTOR	3.3uH			

****

*	1-650-836-11	LOADING BOARD				
		**********				
		< CONNECTOR >				
* CN291	1-568-943-11	PIN, CONNECTOR 5P				
		< SWITCH >				
S291	1-572-086-11	SWITCH, LEAF (LOAD OUT)				
S292	1-572-086-11	SWITCH, LEAF (LOAD IN)				

****

*	A-4673-376-A	MAIN BOARD, COMPLETE				
		**********				
*	3-309-144-21	HEAT SINK				
*	4-870-539-00	PLATE, GROUND				
	7-685-871-01	SCREW +BVTT 3X6 (S)				
		< CAPACITOR >				
C101	1-128-489-11	ELECT	3300uF	20%	16V	
C102	1-124-122-11	ELECT	100uF	20%	50V	
C103	1-124-122-11	ELECT	100uF	20%	50V	
C104	1-161-494-00	CERAMIC	0.022uF		25V	
C110	1-161-494-00	CERAMIC	0.022uF		25V	
C111	1-164-159-11	CERAMIC	0.1uF		50V	
C112	1-161-494-00	CERAMIC	0.022uF		25V	
C113	1-126-101-11	ELECT	100uF	20%	16V	
C115	1-124-122-11	ELECT	100uF	20%	50V	
C116	1-124-443-00	ELECT	100uF	20%	10V	
C117	1-124-122-11	ELECT	100uF	20%	50V	
C118	1-124-122-11	ELECT	100uF	20%	50V	
C120	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C121	1-124-443-00	ELECT	100uF	20%	10V	
C122	1-162-306-11	CERAMIC	0.01uF	30%	16V	

Ref.No.	Part No.	Description			Remark
C123	1-124-473-11	ELECT	1000uF	20%	10V
C124	1-162-306-11	CERAMIC	0.01uF	30%	16V
C151	1-164-159-11	CERAMIC	0.1uF		50V
C152	1-164-159-11	CERAMIC	0.1uF		50V
C153	1-164-159-11	CERAMIC	0.1uF		50V
C154	1-164-159-11	CERAMIC	0.1uF		50V
C155	1-164-159-11	CERAMIC	0.1uF		50V
C156	1-161-494-00	CERAMIC	0.022uF		25V
C157	1-162-282-31	CERAMIC	100PF	10%	50V
C158	1-162-290-31	CERAMIC	470PF	10%	50V
C159	1-162-294-31	CERAMIC	0.001uF	10%	50V
C160	1-162-294-31	CERAMIC	0.001uF	10%	50V
C161	1-162-294-31	CERAMIC	0.001uF	10%	50V
C162	1-162-294-31	CERAMIC	0.001uF	10%	50V
C201	1-130-475-00	MYLAR	0.0022uF	5%	50V
C202	1-130-475-00	MYLAR	0.0022uF	5%	50V
C203	1-124-907-11	ELECT	10uF	20%	50V
C204	1-162-290-31	CERAMIC	470PF	10%	50V
C205	1-162-306-11	CERAMIC	0.01uF	30%	16V
C206	1-124-907-11	ELECT	10uF	20%	50V
C251	1-130-475-00	MYLAR	0.0022uF	5%	50V
C252	1-130-475-00	MYLAR	0.0022uF	5%	50V
C253	1-124-907-11	ELECT	10uF	20%	50V
C254	1-162-290-31	CERAMIC	470PF	10%	50V
C255	1-162-306-11	CERAMIC	0.01uF	30%	16V
C256	1-124-907-11	ELECT	10uF	20%	50V
C281	1-162-306-11	CERAMIC	0.01uF	30%	16V
C282	1-162-306-11	CERAMIC	0.01uF	30%	16V
C283	1-162-306-11	CERAMIC	0.01uF	30%	16V
C284	1-164-159-11	CERAMIC	0.1uF		50V
C285	1-124-927-11	ELECT	4.7uF	20%	100V
		< CONNECTOR >			
* CN101	1-691-406-11	CONNECTOR, BOARD TO BOARD 7P			
CN201	1-770-167-11	CONNECTOR, FFC/FPC 19P			
* CN202	1-564-339-00	PIN, CONNECTOR 5P			
* CN203	1-568-841-11	SOCKET, CONNECTOR 25P			
		< DIODE >			
D101	8-719-200-02	DIODE	10E2		
D102	8-719-200-02	DIODE	10E2		
D105	8-719-200-02	DIODE	10E2		
D106	8-719-200-02	DIODE	10E2		
D107	8-719-109-68	DIODE	RD3.6ES-B1		
D108	8-719-109-85	DIODE	RD5.1ES-B2		
D109	8-719-109-89	DIODE	RD5.6ESB2		
D110	8-719-110-72	DIODE	RD30ESB2		
D111	8-719-200-02	DIODE	10E2		
D112	8-719-200-02	DIODE	10E2		
D281	8-719-109-71	DIODE	RD3.9ES-B1		

Ref.No.	Part No.	Description			Remark
		< IC >			
IC101	8-759-820-84	IC	L78MR05		
IC102	8-759-604-86	IC	M5F7807L		
IC201	8-759-900-72	IC	NE5532P		
IC202	8-749-923-04	IC	TOTX178 (CD DIGITAL (OPTICAL OUT))		
IC203	8-759-822-09	IC	LB1641		
		< JACK >			
J201	1-770-272-11	JACK, PIN 2P (CD (OUT))			
		< TRANSISTOR >			
Q101	8-729-900-80	TRANSISTOR	DTC114ES		
Q102	8-729-900-80	TRANSISTOR	DTC114ES		
Q103	8-729-209-15	TRANSISTOR	2SD2012		
Q104	8-729-141-83	TRANSISTOR	2SB1094-LK		
Q111	8-729-900-61	TRANSISTOR	DTA114ES		
Q112	8-729-900-61	TRANSISTOR	DTA114ES		
		< RESISTOR >			
R101	1-249-437-11	CARBON	47K	5%	1/4W
R102	1-249-413-11	CARBON	470	5%	1/4W
R103	1-249-413-11	CARBON	470	5%	1/4W
R104	1-247-807-31	CARBON	100	5%	1/4W
R107	1-249-429-11	CARBON	10K	5%	1/4W
R108	1-249-441-11	CARBON	100K	5%	1/4W
R110	1-249-421-11	CARBON	2.2K	5%	1/4W
R112	1-249-417-11	CARBON	1K	5%	1/4W
R113	1-249-417-11	CARBON	1K	5%	1/4W
R114	1-249-417-11	CARBON	1K	5%	1/4W
R116	1-260-091-11	CARBON	220	5%	1/2W
R117	1-260-091-11	CARBON	220	5%	1/2W
R118	1-260-091-11	CARBON	220	5%	1/2W
R119	1-260-091-11	CARBON	220	5%	1/2W
R120	1-260-090-11	CARBON	180	5%	1/2W
R121	1-260-090-11	CARBON	180	5%	1/2W
R130	1-249-425-11	CARBON	4.7K	5%	1/4W
R131	1-249-425-11	CARBON	4.7K	5%	1/4W
R132	1-249-425-11	CARBON	4.7K	5%	1/4W
R133	1-249-441-11	CARBON	100K	5%	1/4W
R161	1-247-807-31	CARBON	100	5%	1/4W
R162	1-247-807-31	CARBON	100	5%	1/4W
R163	1-247-807-31	CARBON	100	5%	1/4W
R201	1-249-419-11	CARBON	1.5K	5%	1/4W
R202	1-249-419-11	CARBON	1.5K	5%	1/4W
R205	1-249-441-11	CARBON	100K	5%	1/4W
R207	1-249-421-11	CARBON	2.2K	5%	1/4W
R208	1-249-429-11	CARBON	10K	5%	1/4W
R209	1-249-428-11	CARBON	8.2K	5%	1/4W
R210	1-249-441-11	CARBON	100K	5%	1/4W

MAIN PANEL

Ref. No.	Part No.	Description				Remark
R251	1-249-419-11	CARBON	1.5K	5%	1/4W	
R252	1-249-419-11	CARBON	1.5K	5%	1/4W	
R255	1-249-441-11	CARBON	100K	5%	1/4W	
R257	1-249-421-11	CARBON	2.2K	5%	1/4W	
R258	1-249-429-11	CARBON	10K	5%	1/4W	
R259	1-249-428-11	CARBON	8.2K	5%	1/4W	
R260	1-249-441-11	CARBON	100K	5%	1/4W	
**********						
*	A-4673-377-A	PANEL BOARD, COMPLETE				
		**********				
*	4-970-936-01	HOLDER (FL)				
		< CAPACITOR >				
C602	1-164-159-11	CERAMIC	0.1uF		50V	
C604	1-164-159-11	CERAMIC	0.1uF		50V	
C605	1-164-159-11	CERAMIC	0.1uF		50V	
C606	1-162-301-11	CERAMIC	0.0015uF	30%	16V	
C607	1-162-301-11	CERAMIC	0.0015uF	30%	16V	
C608	1-126-177-11	ELECT	100uF	20%	10V	
C609	1-124-916-11	ELECT	22uF	20%	63V	
C610	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C631	1-162-282-31	CERAMIC	100PF	10%	50V	
C674	1-162-290-31	CERAMIC	470PF	10%	50V	
		< CONNECTOR >				
* CN601	1-568-867-11	SOCKET, CONNECTOR 25P				
		< DIODE >				
D601	8-719-987-63	DIODE 1N4148M				
D602	8-719-987-63	DIODE 1N4148M				
D603	8-719-987-63	DIODE 1N4148M				
		< FLUORESCENT INDICATOR >				
FL601	1-517-369-11	INDICATOR TUBE, FLUORESCENT				
		< IC >				
IC601	8-759-340-60	IC uPD78044AGF-091-3B9				
		< TRANSISTOR >				
Q601	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q651	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q652	8-729-620-05	TRANSISTOR 2SC2603-EF				
		< RESISTOR >				
R601	1-249-425-11	CARBON	4.7K	5%	1/4W	
R602	1-249-425-11	CARBON	4.7K	5%	1/4W	
R603	1-249-417-11	CARBON	1K	5%	1/4W	
R604	1-249-417-11	CARBON	1K	5%	1/4W	

Ref. No.	Part No.	Description				Remark
R605	1-249-429-11	CARBON	10K	5%	1/4W	
R606	1-249-429-11	CARBON	10K	5%	1/4W	
R607	1-249-429-11	CARBON	10K	5%	1/4W	
R608	1-249-393-11	CARBON	10	5%	1/4W	
R609	1-249-425-11	CARBON	4.7K	5%	1/4W	
R610	1-249-429-11	CARBON	10K	5%	1/4W	
R611	1-249-429-11	CARBON	10K	5%	1/4W	
R612	1-249-413-11	CARBON	470	5%	1/4W	
R613	1-249-415-11	CARBON	680	5%	1/4W	
R614	1-249-417-11	CARBON	1K	5%	1/4W	
R615	1-249-413-11	CARBON	470	5%	1/4W	
R616	1-249-415-11	CARBON	680	5%	1/4W	
R617	1-249-413-11	CARBON	470	5%	1/4W	
R618	1-249-415-11	CARBON	680	5%	1/4W	
R619	1-249-417-11	CARBON	1K	5%	1/4W	
R620	1-249-423-11	CARBON	3.3K	5%	1/4W	
R621	1-249-423-11	CARBON	3.3K	5%	1/4W	
R622	1-249-423-11	CARBON	3.3K	5%	1/4W	
R624	1-249-425-11	CARBON	4.7K	5%	1/4W	
R625	1-249-425-11	CARBON	4.7K	5%	1/4W	
R626	1-247-807-31	CARBON	100	5%	1/4W	
R627	1-247-807-31	CARBON	100	5%	1/4W	
R628	1-247-807-31	CARBON	100	5%	1/4W	
R629	1-247-807-31	CARBON	100	5%	1/4W	
R631	1-249-417-11	CARBON	1K	5%	1/4W	
R651	1-249-441-11	CARBON	100K	5%	1/4W	
R652	1-249-441-11	CARBON	100K	5%	1/4W	
R653	1-249-441-11	CARBON	100K	5%	1/4W	
R654	1-249-441-11	CARBON	100K	5%	1/4W	
R655	1-249-441-11	CARBON	100K	5%	1/4W	
R656	1-249-441-11	CARBON	100K	5%	1/4W	
R657	1-249-441-11	CARBON	100K	5%	1/4W	
R658	1-249-441-11	CARBON	100K	5%	1/4W	
R659	1-249-441-11	CARBON	100K	5%	1/4W	
R660	1-249-441-11	CARBON	100K	5%	1/4W	
R661	1-249-441-11	CARBON	100K	5%	1/4W	
R662	1-249-441-11	CARBON	100K	5%	1/4W	
R663	1-249-441-11	CARBON	100K	5%	1/4W	
R664	1-249-441-11	CARBON	100K	5%	1/4W	
R665	1-249-441-11	CARBON	100K	5%	1/4W	
R666	1-249-441-11	CARBON	100K	5%	1/4W	
R667	1-249-441-11	CARBON	100K	5%	1/4W	
R668	1-249-441-11	CARBON	100K	5%	1/4W	
R669	1-249-441-11	CARBON	100K	5%	1/4W	
R670	1-249-441-11	CARBON	100K	5%	1/4W	
R671	1-249-441-11	CARBON	100K	5%	1/4W	
R672	1-249-441-11	CARBON	100K	5%	1/4W	
R673	1-249-441-11	CARBON	100K	5%	1/4W	
R674	1-249-441-11	CARBON	100K	5%	1/4W	
R675	1-249-429-11	CARBON	10K	5%	1/4W	

Ref.No.	Part No.	Description	Remark
R676	1-249-441-11	CARBON 100K 5% 1/4W	
R677	1-249-429-11	CARBON 10K 5% 1/4W	
		< SWITCH >	
S601	1-554-303-21	SWITCH, TACTILE (EDIT)	
S602	1-554-303-21	SWITCH, TACTILE (CHECK)	
S603	1-554-303-21	SWITCH, TACTILE (CLEAR)	
S604	1-554-303-21	SWITCH, TACTILE (▶▶)	
S605	1-554-303-21	SWITCH, TACTILE (TIME)	
S606	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S607	1-554-303-21	SWITCH, TACTILE (PLAY MODE)	
S608	1-554-303-21	SWITCH, TACTILE (▷/▯▯)	
S609	1-554-303-21	SWITCH, TACTILE (□)	
S610	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE)	
S611	1-554-303-21	SWITCH, TACTILE (◀◀)	
S612	1-467-938-11	ENCODER, ROTARY (I◀◀ AMS ▶▶I)	
		< VIBRATOR >	
X601	1-579-233-11	VIBRATOR, CERAMIC (5MHz)	
**********			
		MISCELLANEOUS	
		**********	
6	1-769-620-11	WIRE (FLAT TYPE) (25 CORE)	
8	1-769-621-11	WIRE (FLAT TYPE) (19 CORE)	
303	1-452-719-11	MAGNET ASSY	
⚠355	8-848-367-11	DEVICE, OPTICAL KSS-213B/K-N	
356	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M903	A-4604-363-A	MOTOR (L) ASSY (LOADING)	
Q102	8-729-900-80	TRANSISTOR DTC114ES	
Q103	8-729-209-15	TRANSISTOR 2SD2012	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-621-255-15	SCREW +P 2X3	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Home A&V Products Div.

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Quality Engineering Dept.

CDP-EX10

SONY

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

SUPPLEMENT-1

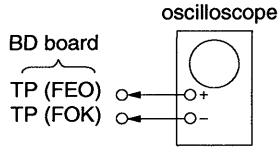
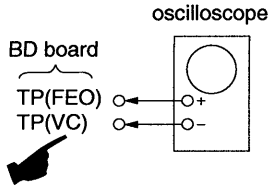
File this supplement with the service manual.

Subject : 1. CORRECTION
2. S CURVE CHECK SPECIFICATION CHANGED
3. PARTS CHANGED & PARTS SUPPLY CLASSIFICATION CHANGED

(SPM-96036)

1. CORRECTION

• Correct your service manual as shown below.
☛ : indicates corrected portion.

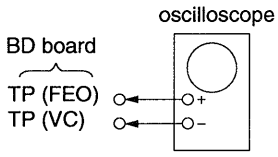
Page	INCORRECT	CORRECT
4	**S Curve Check** 	**S Curve Check** 

2. S CURVE CHECK SPECIFICATION CHANGED

The value of mounted parts of the BD board has changed due to improvements.
Following this change, the S Curve check values have also changed as follows.
☛ : indicates changed portion

Ref No.	FORMER					NEW				
	Part No.	Description			Remark	Part No.	Description			Remark
	*** BD BOARD, COMPLETE ***					*** BD BOARD, COMPLETE ***				
C116	1-163-143-00	CERAMIC CHIP	0.0012μF	5%	50V	1-163-016-00	CERAMIC CHIP	0.0039μF	10%	50V
C118	1-163-038-91	CERAMIC CHIP	0.1μF		25V	1-107-823-11	CERAMIC CHIP	0.47μF	10%	16V
R105	1-216-089-00	METAL CHIP	47K	5%	1/10W	1-216-093-00	METAL CHIP	68K	5%	1/10W
R106	1-216-089-00	METAL CHIP	47K	5%	1/10W	1-216-093-00	METAL CHIP	68K	5%	1/10W
R107	1-216-089-00	METAL CHIP	47K	5%	1/10W	1-216-093-00	METAL CHIP	68K	5%	1/10W
R108	1-216-089-00	METAL CHIP	47K	5%	1/10W	1-216-093-00	METAL CHIP	68K	5%	1/10W
R112	1-216-077-00	METAL CHIP	15K	5%	1/10W	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-077-00	METAL CHIP	15K	5%	1/10W	1-216-083-00	METAL CHIP	27K	5%	1/10W
R117	1-216-093-00	METAL CHIP	68K	5%	1/10W	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R119	1-216-121-00	METAL CHIP	1M	5%	1/10W	1-216-089-91	METAL CHIP	47K	5%	1/10W
R153	1-216-089-00	METAL CHIP	47K	5%	1/10W	1-216-082-00	METAL CHIP	24K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W	1-216-085-00	METAL CHIP	33K	5%	1/10W

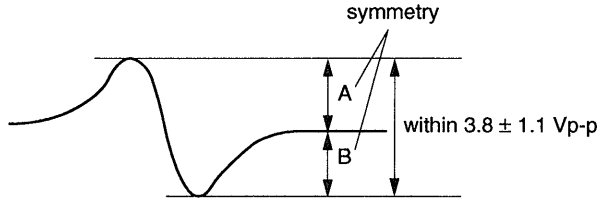
S Curve Check — Page 4 —



Procedure :

1. Connect oscilloscope to test point TP (FEO).
2. Connect between test point TP (FOK) and GND by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.8±1.1 Vp-p.

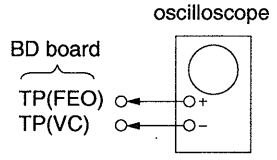
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

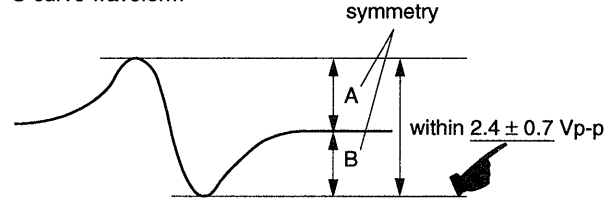
S Curve Check — Page 4 —



Procedure :

1. Connect oscilloscope to test point TP (FEO).
2. Connect between test point TP (FOK) and GND by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 2.4±0.7 Vp-p.

☛ S-curve waveform



6. After check, remove the lead wire connected in step 2.

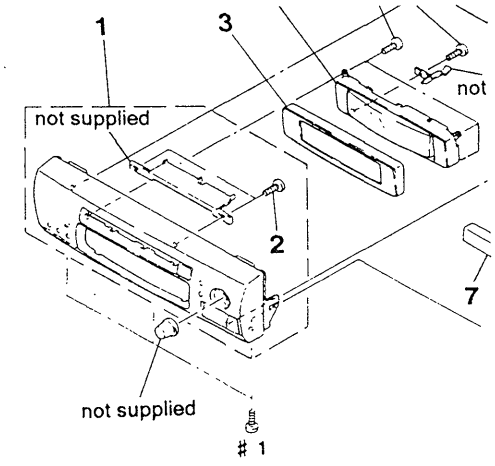
Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

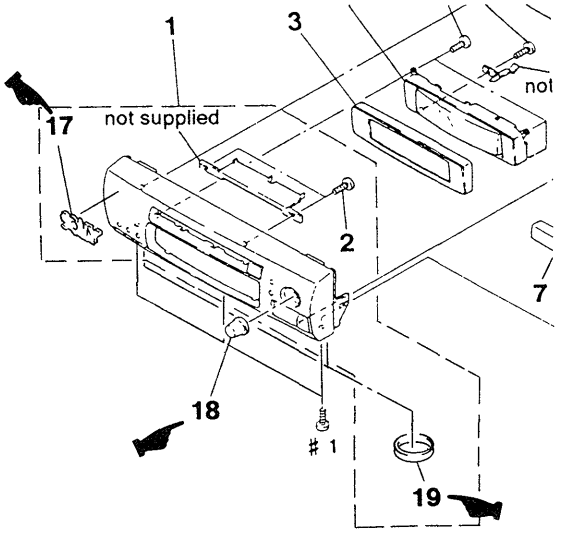
3. PARTS CHANGED & PARTS SUPPLY CLASSIFICATION CHANGED

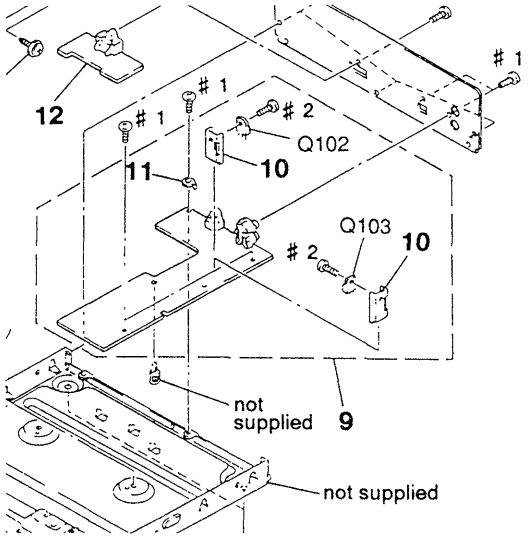
• Revise your service manual as shown below due to parts supply classification has been changed.

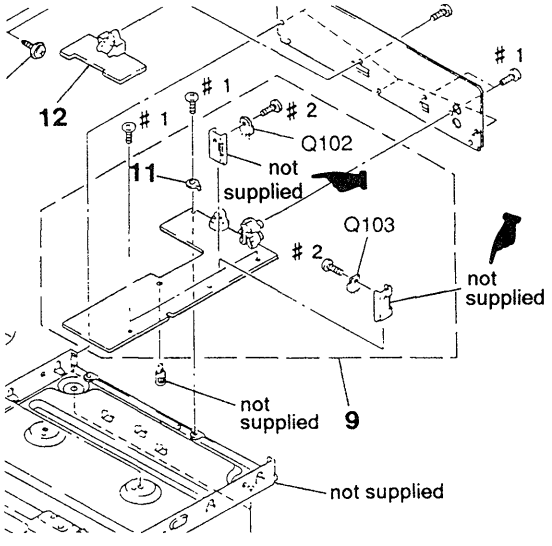
: indicates changed portion.

Page	CURRENT				REVISED			
20	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
			*** EXPLODED VIEWS ***				*** EXPLODED VIEWS ***	
	* 10	3-309-144-21	HEAT SINK				Not supplied	
	* 11	4-870-539-00	PLATE, GROUND		* 11	4-870-539-11	PLATE, GROUND	
			not supplied		17	4-962-708-01	EMBLEM (4-A), SONY	
			not supplied		18	4-970-933-01	KNOB (JOG)	
			not supplied		19	4-972-656-01	FOOT (ORNAMENT)	









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CDP-EX10

SONY
SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

CORRECTION-1

Correct your service manual as shown below.

☛ : **indicates corrected portion.**

Page	INCORRECT			CORRECT	
	Ref.No.	Part No.	Description	Part No.	Description
20	3	4-970-932-01	PLATE (ST/CD), ORNAMENTAL	4-970-932-11 ☛	PLATE (ST/CD), ORNAMENTAL

(ECN-TC500170)

Sony Corporation
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Home A&V Products Div.

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